NEC

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N8100-1650F/1651F/1652F/1653F

NEC Express5800/R120b-2
User's Guide

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7-2010
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Keep this manual at hand for quick reference at anytime necessary.

SAFETY INDICATIONS

Follow the instructions in this manual for your safety to use the NEC Express server.

Your server contains components with possible danger, hazards that may cause by ignoring warnings, and preventive actions against such hazards.

Server components with possible danger are indicated with a warning label placed on or around them as well as described in this manual.

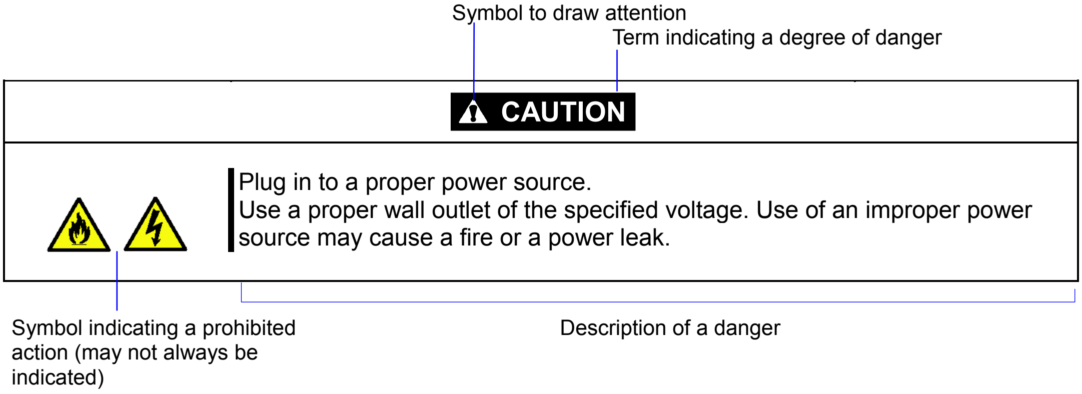
In this manual or warning labels, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:

⚠ WARNING	Indicates the presence of a hazard that may result in death or serious personal injury if the instruction is ignored.
⚠ CAUTION	Indicates the presence of a hazard that may cause minor personal injury, including burns, or property damage if the instruction is ignored.

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

△	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type. (Attention)	⚠
🚫	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action. (Prohibited Action)	🚫
●	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard. (Mandatory Action)	●

(Example)



Symbol to draw attention
Term indicating a degree of danger

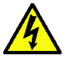
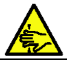
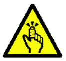
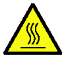
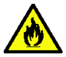
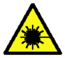
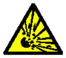
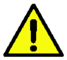
⚠ CAUTION

Plug in to a proper power source.
Use a proper wall outlet of the specified voltage. Use of an improper power source may cause a fire or a power leak.

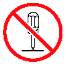
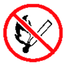
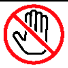
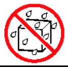
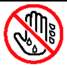
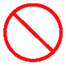
Symbol indicating a prohibited action (may not always be indicated)
Description of a danger

SYMBOLS USED IN THIS MANUAL AND WARNING LABELS

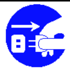
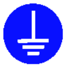
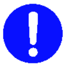
Attentions

	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause fingers to be caught.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause fumes or fire.
	Indicates that improper use may cause loss of eyesight due to laser beam.
	Indicates that improper use may cause explosion.
	Indicates a general notice or warning that cannot be specifically identified.

Prohibited Actions

	Do not disassemble, repair, or modify the server. Otherwise, an electric shock or fire may be caused.
	Do not place the server near the fire. Otherwise, a fire may be caused.
	Do not touch the component specified by this symbol. Otherwise, an electric shock or burn may be caused.
	Do not use the server in the place where water or liquid may pour. Otherwise, an electric shock or fire may be caused.
	Do not touch the server with wet hand. Otherwise, an electric shock may be caused.
	Indicates a general prohibited action that cannot be specifically identified.

Mandatory Action

	Unplug the power cord of the server. Otherwise, an electric shock or fire may be caused.
	Be sure to provide earthing. Otherwise, an electric shock or fire may be caused.
	Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Statement

Warning: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate preventive measures (EN55022).

BSMI Statement

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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(6) If you find any missing pages or pages out of order in this manual, please contact your dealer for a replacement.

(7) The ITE is not intended to be installed and used in a home, school or public area accessible to the general population, and the thumbscrews should be tightened with a tool after both initial installation and subsequent access to the panel.

(8) This equipment intended for installation in restricted access location.
- access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and
- access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

Warning: Remove all power supply cords before service.

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Momentary voltage drop prevention:

This product may be affected by a momentary voltage drop caused by lightning. To prevent a momentary voltage drop, an AC uninterruptible power supply (UPS) unit should be used.

PREFACE

Congratulations on your purchase of NEC Express server.

Purchase of this server is your assurance of receiving state-of-the-art, high quality hardware to meet your needs, both now and in the future.

Read this User's Guide thoroughly to fully understand handling of the NEC Express server and appreciate its functions to the maximum extent.

ABOUT THIS USER'S GUIDE

This manual is a guide for proper setup and use of your server.
This manual also covers useful procedures for dealing with difficulties and problems that may arise during setup or operation of your server.
Keep this manual for future use.
The following describes how to proceed with this manual.

How to Use This Manual

To aid you in finding information quickly, this manual contains the following information:

Chapter 1 Notes on Using Your Server
includes information that needs attention to use the server. Make sure to read this chapter before setting up and using the server. It also includes requirements and advisory information for transfer and disposal of the server.

Chapter 2 General Description
includes information necessary to use the server, such as names and functions of its components, handling of the optical disk drive.

Chapter 3 Setting Up Your Server
tells you how to select a site, unpack the system, make cable connections, and power on your system.

Chapter 4 Configuring Your Server
tells you how to configure the system and provides instructions for running the BIOS SETUP Utility and the RAID configuration utility, which is used to configure RAID drives in your system. This chapter also provides information on mother board jumper settings.

Chapter 5 Installing the Operating System with Express Setup
describes how to install the operating system.

Chapter 6 Installing and Using Utilities
describes how to install the utilities for the server. It also includes a description on using the attached "NEC EXPRESSBUILDER" DVD-ROM.

Chapter 7 Maintenance
provides you with all the information necessary to maintain successful operation of the server. This chapter also includes a description on relocating and storing the server.

Chapter 8 Troubleshooting
contains helpful information for solving problems that might occur with your system.

Chapter 9 Upgrading Your Server
provides you with instructions for upgrading your system with an additional processor, optional memory, optional add-in cards, hard disk drives, peripheral devices, and power supply.

Chapter 10 Internal Cabling Diagram
includes cabling information for the SAS/SATA2 controller, 5.25-inch device, and the power supply.

Appendix A Specification
provides specifications for your server.

Appendix B Other Precautions
provides supplementary notes on using the server.

Appendix C IRQ and I/O Port Address
provides a list of factory-set IRQs and I/O port addresses assigned.

Appendix D Installing Windows Server 2008 R2
describes how to install Microsoft Windows Server 2008 R2 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2008 R2. See Chapter 5 for details.

Appendix E Installing Windows Server 2008
describes how to install Microsoft Windows Server 2008 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003 x64 Editions. See Chapter 5 for details.

Appendix F Installing Windows Server 2003 x64 Editions
describes how to install Microsoft Windows Server 2003 x64 Editions without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003 x64 Editions. See Chapter 5 for details.

Appendix G Installing Windows Server 2003
describes how to install Microsoft Windows Server 2003 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003. See Chapter 5 for details.

Appendix H Using a Client Computer Which Has a CD Drive
describes how to install the management software of EXPRESSBUILDER to the client computer without the DVD drive.

Appendix I Accessing Power and Performance Data
describes how to collect the power and performance data, including power consumption, inlet air temperature, and processor utilization of NEC Express server.

Appendix J Product Configuration Record Table
provides a table to be filled with your server configuration.

Text Conventions

The following conventions are used throughout this manual. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

IMPORTANT:	Items that are mandatory or require attention when using the server
NOTE:	Helpful and convenient piece of information

IN THE PACKAGE

The carton contains various accessories, as well as the server itself. See the packing list to make sure that you have everything and that individual components are not damaged. If you find any component missing or damaged, contact your service representative.

- Store the provided accessories in a designated place for your convenience. You will need them to install an optional device or troubleshoot your server, as well as to set it up.
- Make a backup copy of each provided floppy disk, if any. Store the original disk as the master disk in a designated place, and use its copy.
- Improper use of any provided DVD/CD-ROM may alter your system environment. If you find anything unclear, immediately ask your service representative for help.

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Chapter 1

Notes on Using Your Server

This chapter includes information necessary for proper and safe operation of your server.

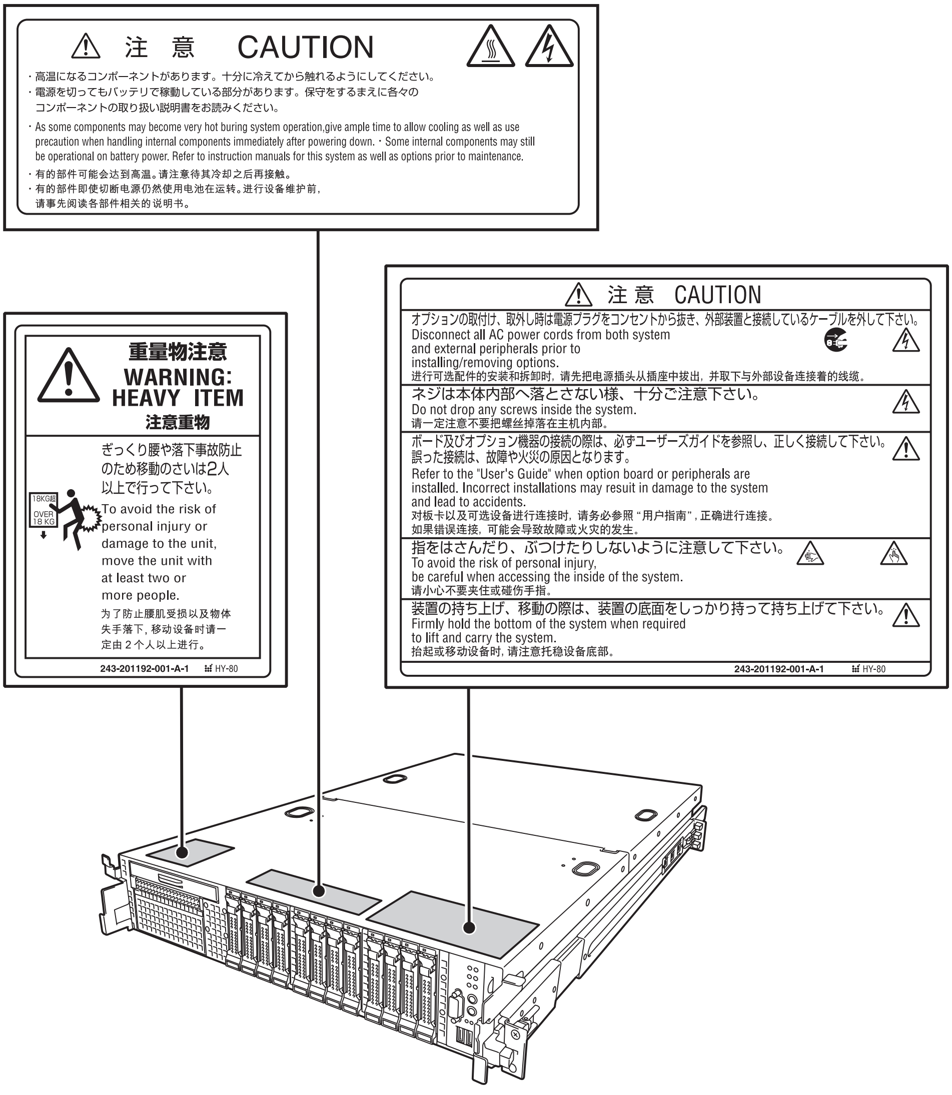
WARNING LABELS

The warning label is attached to components with possible danger or their vicinity in your server to inform the user that a hazardous situation may arise when operating the server. (Do not intentionally remove or damage any of the labels.)

If you find any labels totally/partially removed or illegible due to damage, contact your sales representative.

External View

2.5-inch disk model



⚠ 注 意 CAUTION

- 高温になるコンポーネントがあります。十分に冷えてから触れるようにしてください。
- 電源を切ってもバッテリで稼動している部分があります。保守をするまえに各々の
コンポーネントの取り扱い説明書をお読みください。
- As some components may become very hot buring system operation,give ample time to allow cooling as well as use precaution when handling internal components immediately after powering down.・Some internal components may still be operational on battery power. Refer to instruction manuals for this system as well as options prior to maintenance.
- 有的部件可能会达到高温。请注意待其冷却之后再接触。
- 有的部件即使切断电源仍然使用电池在运转。进行设备维护前，
请事先阅读各部件相关的说明书。

重量物注意

WARNING:
HEAVY ITEM

注意重物

ぎっくり腰や落下事故防止のため移動のさいは2人以上で行って下さい。

To avoid the risk of personal injury or damage to the unit, move the unit with at least two or more people.

为了防止腰肌受损以及物体失手落下，移动设备时请一定由 2 个人以上进行。

243-201192-001-A-1 HY-80

⚠ 注 意 CAUTION

オプションの取付け、取外し時は電源プラグをコンセントから抜き、外部装置と接続しているケーブルを外して下さい。
Disconnect all AC power cords from both system and external peripherals prior to installing/removing options.
进行可选配件的安装和拆卸时，请先把电源插头从插座中拔出，并取下与外部设备连接着的线缆。

ネジは本体内部へ落とさない様、十分ご注意下さい。
Do not drop any screws inside the system.
请一定注意不要把螺丝掉落在主机内部。

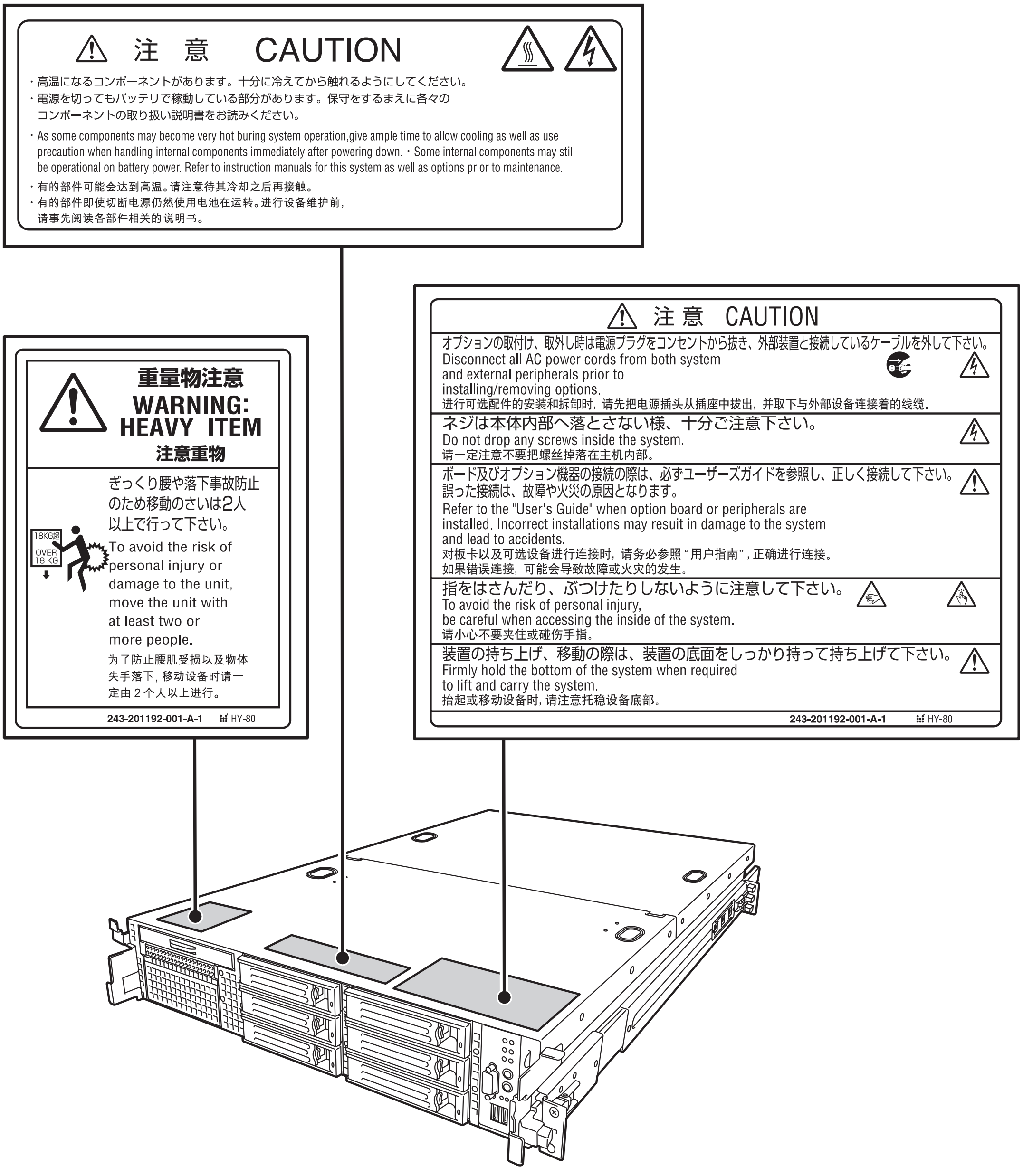
ボード及びオプション機器の接続の際は、必ずユーザーズガイドを参照し、正しく接続して下さい。誤った接続は、故障や火災の原因となります。
Refer to the "User's Guide" when option board or peripherals are installed. Incorrect installations may resuit in damage to the system and lead to accidents.
对板卡以及可选设备进行连接时，请务必参照 “用户指南”，正确进行连接。
如果错误连接，可能会导致故障或火灾的发生。

指をはさんだり、ぶつけたりしないように注意して下さい。
To avoid the risk of personal injury, be careful when accessing the inside of the system.
请小心不要夹住或碰伤手指。

装置の持ち上げ、移動の際は、装置の底面をしっかり持って持ち上げて下さい。
Firmly hold the bottom of the system when required to lift and carry the system.
抬起或移动设备时，请注意托稳设备底部。

243-201192-001-A-1 HY-80

3.5-inch disk model



⚠ 注　意　CAUTION

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请事先阅读各部件相关的说明书。

重量物注意

WARNING: HEAVY ITEM

注意重物

ぎっくり腰や落下事故防止のため移動のさいは2人以上で行って下さい。

To avoid the risk of personal injury or damage to the unit, move the unit with at least two or more people.

为了防止腰肌受损以及物体失手落下，移动设备时请一定由 2 个人以上进行。

243-201192-001-A-1 HY-80

⚠ 注 意 CAUTION

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进行可选配件的安装和拆卸时，请先把电源插头从插座中拔出，并取下与外部设备连接着的线缆。

ネジは本体内部へ落とさない様、十分ご注意下さい。
Do not drop any screws inside the system.
请一定注意不要把螺丝掉落在主机内部。

ボード及びオプション機器の接続の際は、必ずユーザーズガイドを参照し、正しく接続して下さい。
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Refer to the "User's Guide" when option board or peripherals are installed. Incorrect installations may resuit in damage to the system and lead to accidents.
对板卡以及可选设备进行连接时，请务必参照 “用户指南” , 正确进行连接。
如果错误连接，可能会导致故障或火灾的发生。

指をはさんだり、ぶつけたりしないように注意して下さい。
To avoid the risk of personal injury, be careful when accessing the inside of the system.
请小心不要夹住或碰伤手指。

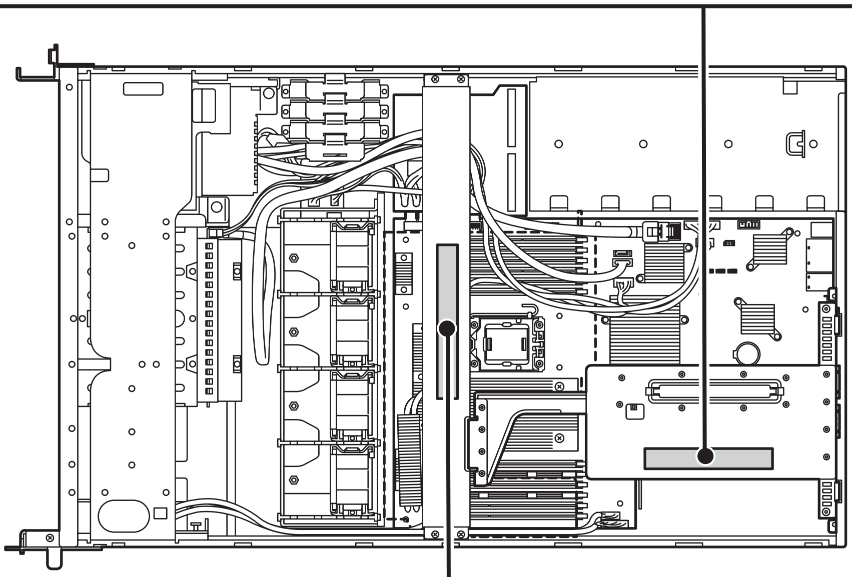
装置の持ち上げ、移動の際は、装置の底面をしっかり持って持ち上げて下さい。
Firmly hold the bottom of the system when required to lift and carry the system.
抬起或移动设备时，请注意托稳设备底部。

243-201192-001-A-1 HY-80

Internal View

2.5-inch disk model

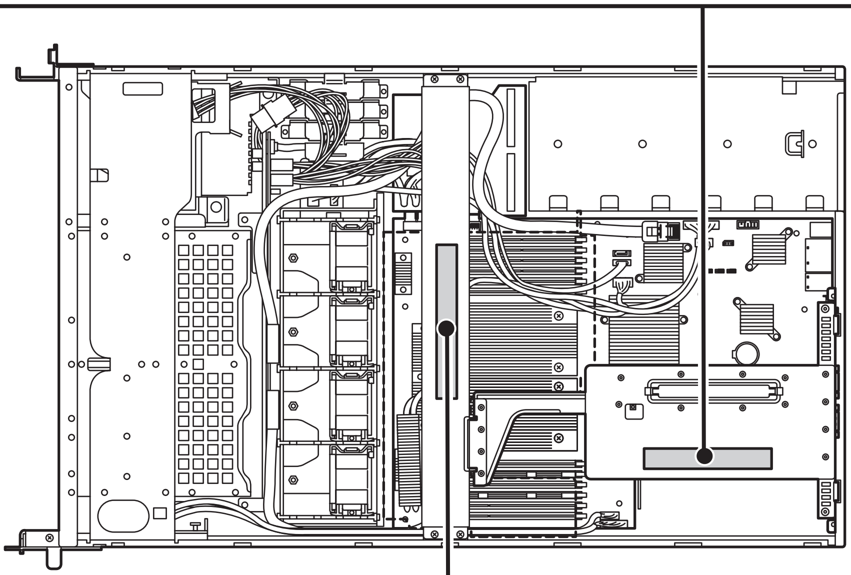
注 意
CAUTION
PCIボードの取りつけ時は、装置のユーザーズガイドの該当箇所をよく読んで実施して下さい。
It may have broken a connector.Read the corresponding part of the USER'S GUIDE when installing or removing PCI board.
PCI板卡插拔时, 请务必仔细阅读“用户指南”的有关说明之后, 再进行操作。否则可能会导致接头的损坏。



注 意
CAUTION
サポートバーを取り外す際は、サポートバーを手で押さえてネジを外して下さい。
（サポートバーが浮き上がり、ネジを紛失する恐れがあります。）
CPU増設時はプロセッサダクトの実装状態についてUser'sGuideを必ず参照して下さい。
Firmly hold the support bar and loosen the screws when removing the support bar.
Read the corresponding part of the USER'S GUIDE when installing or removing CPU.
在处理帮助棒的时候, 请紧紧接着进行作业。
当增加CPU的时候, 请必须参考用户指南。

3.5-inch disk model

⚠ 注 意 CAUTION PCIボードの取りつけ時は、装置のユーザーズガイドの該当箇所をよく読んで実施して下さい。
It may have broken a connector.Read the corresponding part of the USER'S GUIDE when installing or removing PCI board.
PCI板卡插拔时, 请务必仔细阅读"用户指南"的有关说明之后, 再进行操作。否则可能会导致接头的损坏。



⚠ 注 意 CAUTION

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Read the corresponding part of the USER'S GUIDE when installing or removing CPU.
在处理帮助棒的时候, 请紧紧接着进行作业。
当增加CPU的时候, 请必须参考用户指南。

SAFETY NOTES

This section provides notes on using the server safely. Read this section carefully to ensure proper and safe use of the server. For symbols, see "SAFETY INDICATIONS" provided earlier.

For part names described in the safety instruction chapter in this guide, see Chapter 2.

General

⚠ WARNING

Do not use the server for services where critical high availability may directly affect human lives.

Your server is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if the server has been used in the above conditions.

Do not use the server if any smoke, odor, or noise is present.

If smoke, odor, or noise is present, immediately turn off the server and disconnect the power plug from the outlet, then contact your service representative. Using the server in such conditions may cause a fire.

Keep needles or metal objects away from the server.

Do not insert needles or metal objects into ventilation holes in the server or openings in the optical disk drive. Doing so may cause an electric shock.

Do not use the server in any unapproved place.

Install the server on a standard EIA 19-inch rack assembly. Do not install the rack containing the server in a place inappropriate to the rack installation environment.
Failure to follow these instructions may cause some bad influences to be imposed on the server and other systems installed on the rack and also a fire or personal injury due to falling of the rack may occur. For the detailed explanation on the place where the server should be installed and the earthquake-resistant construction for the rack, refer to the manual attached to the rack or contact you service representative.

Always install the server on a rack conforming to the relevant standard.

Install the server on a rack confirming to the EIA standard for the Server to be used. Do not use the server with installed on any other rack than standard EIA 19-inch rack or without the installation on a proper rack. Failure to follow these instructions may cause the server to operate incorrectly and/or personal injury or damages of surrounding devices to occur. Contact your service representative for the racks available for the server.

⚠ CAUTION

Keep water or foreign matter away from the server.

Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the outlet. Do not disassemble the server. Contact your service representative.

Rack

CAUTION

Do not carry or install the server only by a single person.

More than one person is required to carry or install the rack. Failure to follow this instruction may cause the rack to fall to result in personal injury and/or breakages of surrounding devices. In particular, a high rack (such as 44U rack) is unstable if it is not fixed by stabilizers. More than one person must always carry or install the rack while they support it.

Do not install the server so that the load may be concentrated on a specific point.

Install stabilizers on the rack so that the total load of the rack and devices mounted on the rack is not concentrated on a singe point or join more than one rack with each other to distribute the load. Failure to follow this instruction may cause the rack to fall to result in personal injury.

Do not install components on the server only by a single person.

More than one person is required to install parts including the doors and trays for the rack. Failure to follow this instruction may cause some parts to fall to be broken and/or to result in personal injury.

Insert hinges completely.

When installing the rack door, make sure that hinge pins at top and bottom of the door are completely inserted into the rack. Failure to follow this instruction may cause the door to fall to be broken and/or to result in personal injury.

Anchor the equipment rack.

The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of it on slide assemblies. The anchors must be able to withstand a force of up to 113 kg (250 lbs.) You must also consider the weight of any other device installed in the rack.

Do not leave more than one device being pulled out from the rack.

Pulling out more than one device from the rack may cause the rack to be fallen. Only pull out a single device from the rack at a time.

Do not provide the wiring for the server to exceed the rating of the power supply.

To prevent burns, fires, and device damages, the power supplied to the power supply in the rack shall not exceed the rating load of the power branch circuit. Contact your electric constructor or the local power company for the requirements on the wiring and installation of electric facilities.

Power Supply and Power Cord Use

WARNING

Do not hold the power plug with a wet hand.

Do not disconnect/connect the plug while your hands are wet. Failure to follow this warning may cause an electric shock.

Do not connect the ground wire to a gas pipe.

Never connect the ground wire to a gas pipe. Failure to follow this warning may cause a gas explosion.

CAUTION

Plug in to a proper power source.

Use a proper wall outlet. Use of an improper power source may cause a fire or a power leak.
Do not install the server where you need an extension cord. Use of a cord that does not meet the power specifications of the server may heat up the cord and cause a fire.

Do not connect the power cord to an outlet that has an illegal number of connections.

The electric current exceeding the rated flow overheats the outlet, which may cause a fire.

Insert the power plug into the outlet as far as it goes.

Heat generation resulting from a halfway inserted power plug (imperfect contact) may cause a fire. Heat will also be generated if condensation is formed on dusty blades of the halfway inserted plug, increasing the possibility of fire.

Use the authorized power cord only.

Use only the power cord that comes with your server. Use of an unauthorized power cord may cause a fire when the electric current exceeds the rated flow.
Also, observe the following to prevent an electric shock or fire caused by a damaged cord.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not bundle power cords.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use any damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your service representative for replacement.)

Do not use the attached power cord for any other devices or usage.

The power cord that comes with your server is designed aiming to connect with this server and to use with the server, and its safety has been tested. Do not use the attached power cord for any other purpose. Doing so may cause a fire or an electric shock.

Installation, Relocation, Storage, and Connection

WARNING

Disconnect the power cord(s) before installing or removing the server.

Make sure to power off the server and disconnect the power cord(s) from a power outlet before installing/removing the server. All voltage is removed only when the power cords are unplugged.

CAUTION

Never attempt to lift the server only by yourself.

The server weighs max. 21 kg (depending on its hardware configuration). Carrying the server only by yourself may strain your back. Hold the server firmly by its bottom with another person to carry it. Do not hold the front door to lift the server. The front door may be disengaged from the server, causing personal injury.

Do not install the server in any place other than specified.

Do not install the server in the following places or any place other than specified in this User's Guide. Failure to follow this instruction may cause a fire.

- a dusty place
- a humid place such as near a boiler
- a place exposed to direct sunlight
- an unstable place

Do not install the server in a place subject to corrosive gases.

Do not install the server in a place subject to corrosive gases (such as sodium chloride, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, or ozone) or a place where the air might contain elements that lead to corrosion (such as sulfur) or electrically conductive metals as this might cause the wiring on the printed wiring board to short-circuit, leading to fire.

Do not install the server on a rack with leaving covers removed.

Do not install the server on a rack with the cover being removed. Failure to follow this instruction may reduce the cooling effect in the server to result in some malfunction and/or dusts to enter the server to result in a fire or electric shock.

Do not pinch your finger with rails or other components.

Note sufficiently that your fingers may not be caught between a rail and another mechanical part or cut by a rail at installation or removal of the server from the rack.

⚠ CAUTION

Do not apply any load on the server pulled out from the rack.

Do not apply any load on the server pulled out from the rack. Doing so bends the frame of the server. Consequently, the server cannot be pushed back into the rack. Placing an object on the server may also cause personal injury if the server drops.

Do not connect any interface cable with the power cord of the server plugged to a power source.

Make sure to power off the server and unplug the power cord from a power outlet before installing/removing any optional internal device or connecting/disconnecting any interface cable to/from the server. If the server is off-powered but its power cord is plugged to a power source, touching an internal device, cable, or connector may cause an electric shock or a fire resulted from a short circuit.

Do not use any unauthorized interface cable.

Use only interface cables provided by NEC and locate a proper device and connector before connecting a cable. Using an authorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire. Also, observe the following notes on using and connecting an interface cable.

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the server with loose cable connections.

Cleaning and Working with Internal Devices

⚠ WARNING

Do not disassemble, repair, or alter the server.

Never attempt to disassemble, repair, or alter the server on any occasion other than described in this User's Guide. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.

Do not remove the lithium battery.

The server contains the lithium battery. Do not remove the battery. Placing the lithium close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative. Do not disassemble the server to replace or recharge the battery by yourself.

Disconnect the power plug before cleaning the server.

Make sure to power off the server and disconnect the power plug from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cord connected to a power source may cause an electric shock even of the server is off-powered.

Disconnect the power plug from the outlet occasionally and clean the plug with a dry cloth. Heat will be generated if condensation is formed on a dusty plug, which may cause a fire.

⚠ CAUTION

Avoid installation in extreme temperature conditions.

Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.

Make sure to complete board installation.

Always install a board firmly. An incompletely installed board may cause a contact failure, resulting in smoking or fire.

Do not touch any electrical components inside the server during the hot-swap replacement.

All power flows inside the server while the hot-swap replaceable components (hard disk and power supply). Do not touch the electrical components inside the server to avoid an electric shock.

During Operation

⚠ CAUTION

Do not pull out or remove the server from the rack unnecessarily.

Do not pull out or remove the server from the rack unnecessarily. Pulling out or removing the server from the rack may cause not only the server to operate incorrectly but also the server to fall on people to make them injured.

Stay away from the fan.

Keep your hand or hair away from the cooling fan on the rear of the server. Failure to follow this warning may get your hand or hair caught in the fan, resulting in injury.

Avoid contact with the server during thunderstorms.

Disconnect the power plug from the outlet when a thunderstorm is approaching. If it starts thundering before you disconnect the power plug, do not touch any part of the server including the cables. Failure to follow this warning may cause a fire or an electric shock.

Keep animals away from the server.

Failure to follow this warning may cause a fire or an electric shock.

Do not place any object on top of the server.

The server may fall and cause property damage to the surroundings.

Do not leave the server with its optical disk drive tray ejected.

Dust may enter the server through openings and cause malfunctions of the server. Any person may also bump it and get injured.

FOR PROPER OPERATION

Observe the following notes for successful operation of the server. Use of the server ignoring the notes will cause malfunctions or failures of the server.

- Install the rack assembly in a place that meets requirements for successful operation. For details, see Chapter 3, "Setting Up Your Server."
- The server is intended for installation in a Restricted Access Location, mounted above a non-combustible material.
- Make sure to power off the server before connecting or disconnecting cables between the server and peripheral devices.
- Verify that the access LED on the server is unlit before turning off the server or ejecting the floppy disk.
- The server management logic on your system board monitors and logs system voltage changes. When plugging the power cord to the system, you may experience a delay of 30 seconds or more from the time you press the POWER switch on the front panel. This is normal system operation and is required by the server management logic.
- Do not power off or reset the server, or unplug the power cord from the server until the POST (Power On Self-Test) completes. See Chapter 2 for details of POST.
- When you have just turned off the server, wait at least 30 seconds before turning it back on.
- When unplug the power cord(s) from the server, wait at least 30 seconds before re-plugging the power cord(s) to the server.
- Turn off the power and unplug the power cord from the outlet before relocating the server.
- Clean the server on a regular basis. (See Chapter 7 for cleaning.) Regular cleaning proactively prevents various failures of the server.
- Lightning may cause a momentary voltage drop. To prevent this problem, it is recommended to use of an uninterruptible power supply unit.
- Check and adjust the system clock before the operation if any of the following conditions is applicable.
  - After carriage of device
  - After storage of device
  - After the device is entered into the pause state under the environmental condition enduring device operation (temperature: 10°C - 35°C, humidity: 20% - 80%)
- Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).
  If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your service representative to ask maintenance.

TRANSFER TO THIRD PARTY

The following must be observed when you transfer (or sell) the server or software provided with the server to a third party:

Make sure to provide this manual along with the server to a third party.

IMPORTANT: About data on the hard disk drive

Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk drive to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk drive. Data not erased completely may be restored by special software and used for unexpected purposes.

It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

Provided software

To transfer or sell any software application that comes with the server to a third party, the following requirements must be satisfied:

- All provided software applications must be transferred and no backup copies must be retained.
- Transfer requirements listed in "Software License Agreement" that comes with each software application must be satisfied.
- Software applications that are not approved for transfer must be uninstalled before transferring the server.

DISPOSAL AND CONSUMABLES

- Dispose of the server, internal devices, or DVD/CD-ROMs according to laws and regulations of the central and/or local government.

IMPORTANT:

- For disposal (or replacement) of the battery on the mother board of the server, consult with your service representative.
- It is user's responsibility to completely erase or modify all the data stored in storage devices such as hard disk drives so that the data cannot be restored.

- Your server contains some components that work for a limited period of time and require replacement, such as fans, internal batteries, the internal optical disk drive, the floppy disk drive, and the mouse. For stable operation of the server, NEC recommends you replace these components on a regular basis. Consult with your service representative for replacement.

REGARDING THE TRANSPORTATION OF THIS SYSTEM

This system and/or associated options and accessories may be using lithium metal batteries or lithium ion batteries.

There may be restrictions regarding the air or sea transportation of such lithium batteries.

Please contact your reseller or service company prior to transporting this system and/or its options.

USER SUPPORT

Before Asking for Repair, do the following when the server appears to fail:

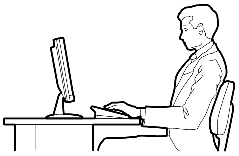
1. Check if the power cord and the cables to other devices are properly connected.
2. See Chapter 8 to find if your problem fits the description. If it does, take the recommended measure for it.
3. Check if the software required for operation of the server is properly installed.

If the server still appears to fail after you have taken the above actions, consult with your service representative immediately. Take notes on lamp indications of the server and alarm indications on the display unit before consultation, which may provide a significant help to your service representative.

Advice for Health

The longer you keep using the computer equipment, the more you become tired, which may cause disorders of your body. When you use a computer, observe the following to keep yourself from getting tired:

Good Working Posture



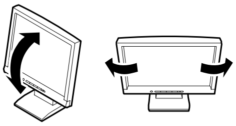
You have good posture if the following are satisfied when you use a computer:

- You sit on a chair with your back straight.
- Your hands are parallel with the floor when you put them on the keyboard.
- You look at the screen slightly lower than your eye height.

You have "good working posture" as described in the above when no part of your body is under excess strain, in other words when your muscles are most relaxed.

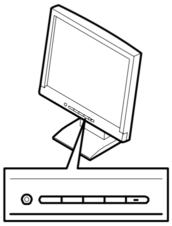
You have "bad posture" when you sit with your back hunched up or you operate a display unit with your face close to the screen. Bad working posture may cause eye strain or poor eyesight.

Adjustment of Display Unit Angles



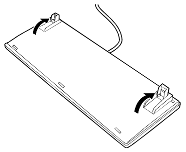
Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. You will not be able to keep "good working posture" and you will feel more tired than you should if you operate a display unit without adjusting horizontal and vertical angles.

Adjustment of Screen Brightness and Contrast

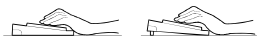


The display unit has brightness and contrast adjustment functions. The most suitable brightness and contrast depend on the individual and the working environment (well-lighted room or insufficient light). Adjust brightness and contrast so that the screen will be easy to see. An extremely bright or dark screen will give a bad effect to your eyes.

Adjustment of Keyboard Angle



The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



Cleaning of Equipment

Clean equipment regularly. It is difficult to see the display contents on a dusty screen. Keeping equipment clean is also important for your sight.

Fatigue and Rest

If you feel tired, you should stop working and do light exercises.

Chapter 2

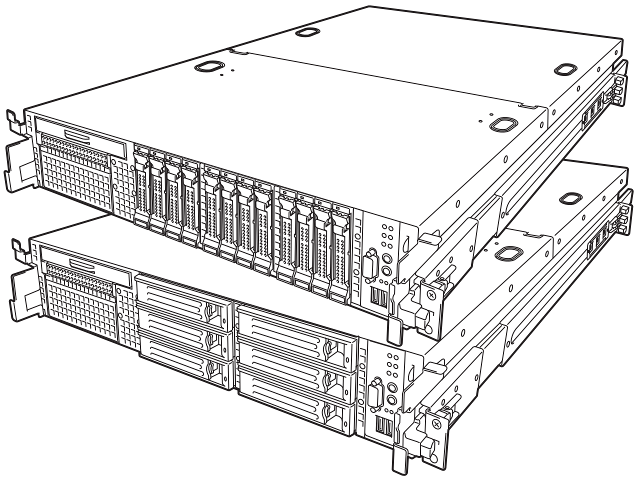
General Description

This chapter provides information that you should be familiar with before using the server. It includes names and functions of the components and features of the server.

OVERVIEW

Your server is a modular, multiprocessing server based on the Intel® Xeon® microprocessor. It is a solid performer and offers the latest technology. The combination of compute performance, memory capacity, and integrated I/O provides a high performance environment for many server market applications. These range from large corporations supporting remote offices to small companies looking to obtain basic connectivity capability such as file and print services, e-mail, web access, web site server, etc.

Your server is housed and available as a rack-mount system. Your server conveniently installs into a standard EIA 19-inch rack assembly.



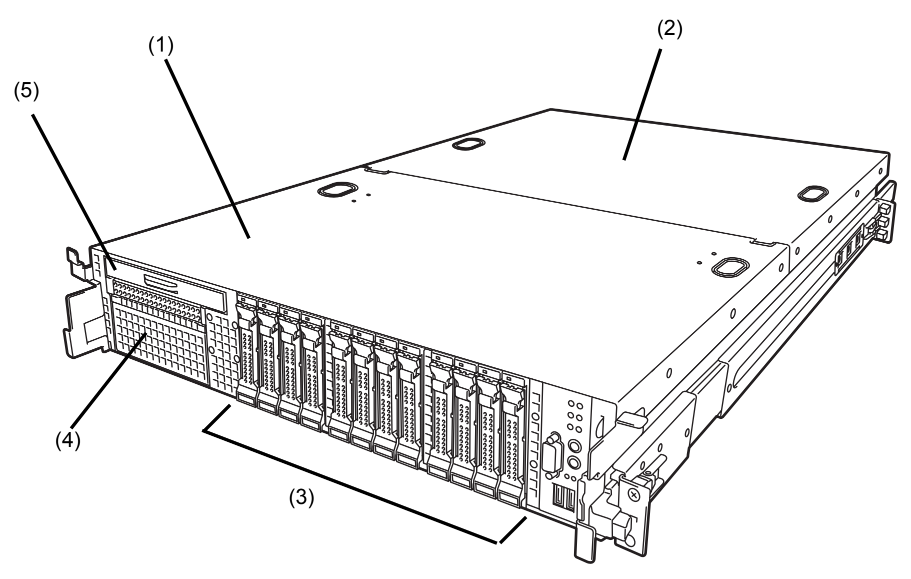
Your server includes a optical disk drive, six hot-swap Serial Attached SCSI (SAS) hard disk drive bays, and a removable media device bay. The hot-swap SAS hard disk drive bays support up to six 1.0-inch SAS hard disk drives that can be swapped in or out of the system without powering it down, if RAID functionality is configured in the system.

The removable media drive bay may be used for installation of a high-speed tape drive.

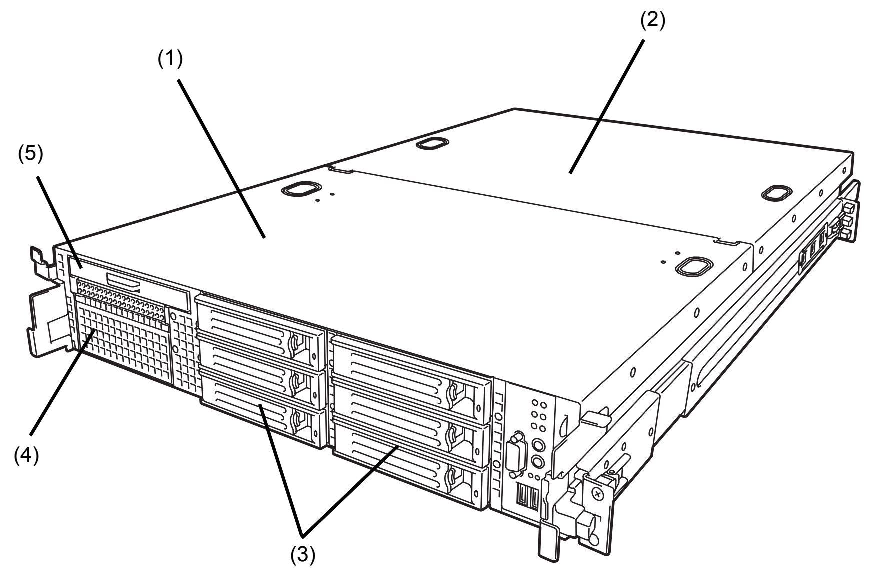
As application requirements increase, you can expand your server with an additional processor, additional memory, add-in boards, and hard disk drives.

EXTERNAL VIEW

2.5-inch disk model



3.5-inch disk model

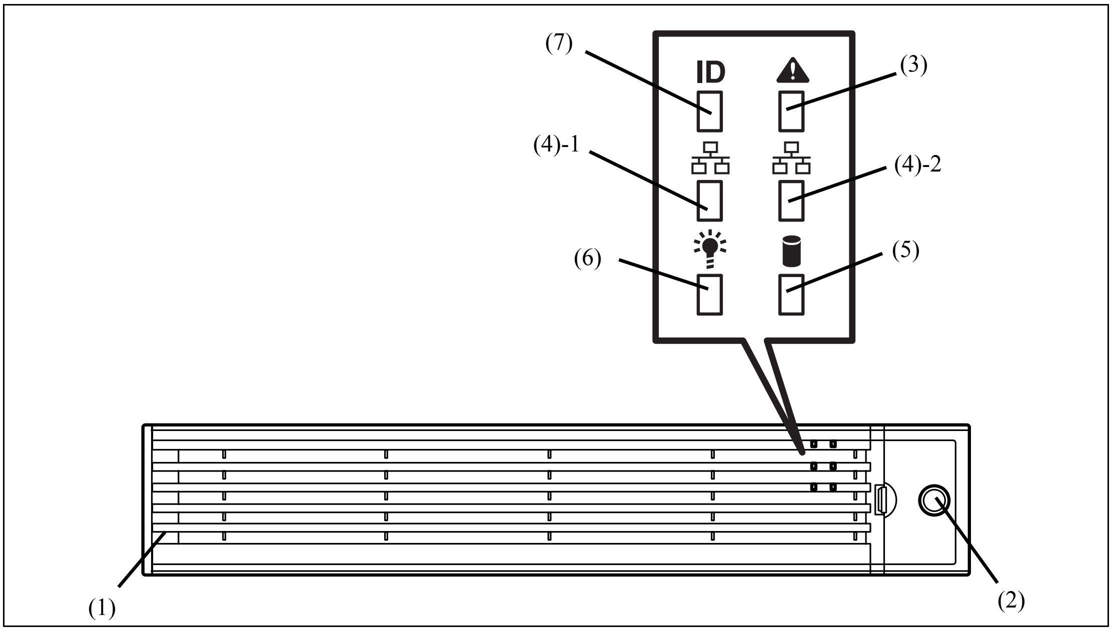


- **(1) Drive cover**
- **(1) Logic cover**
- **(3) Hard disk drive bay**
- **(4) Backup device bay**
- **(5) Optical Disk drive bay**

NAMES AND FUNCTIONS OF PARTS

The following figure shows the location of the front system features.

Front View with Front Bezel Closed



(1) Front bezel
This cover protects the front devices and the drive cover on top of the server during daily use. A security key is provided to lock the cover. (See page 2-16.)

(2) Key slot
Insert the security key into this slot when unlocking the front bezel. (See page 2-16.)

(3) Status LED (green/amber)
This LED indicates the server status (as described on page 8-3). This LED is illuminated in green while the server runs normally. If there is an abnormality, the LED is illuminated in amber or blinks.

(4) ACT LEDs (green)
These LEDs are illuminated when the system is connected to a network (as described on page 8-5). The 1 after the value in parentheses indicates the LED for LAN connector 1, and the 2 indicates the LED for LAN connector 2.

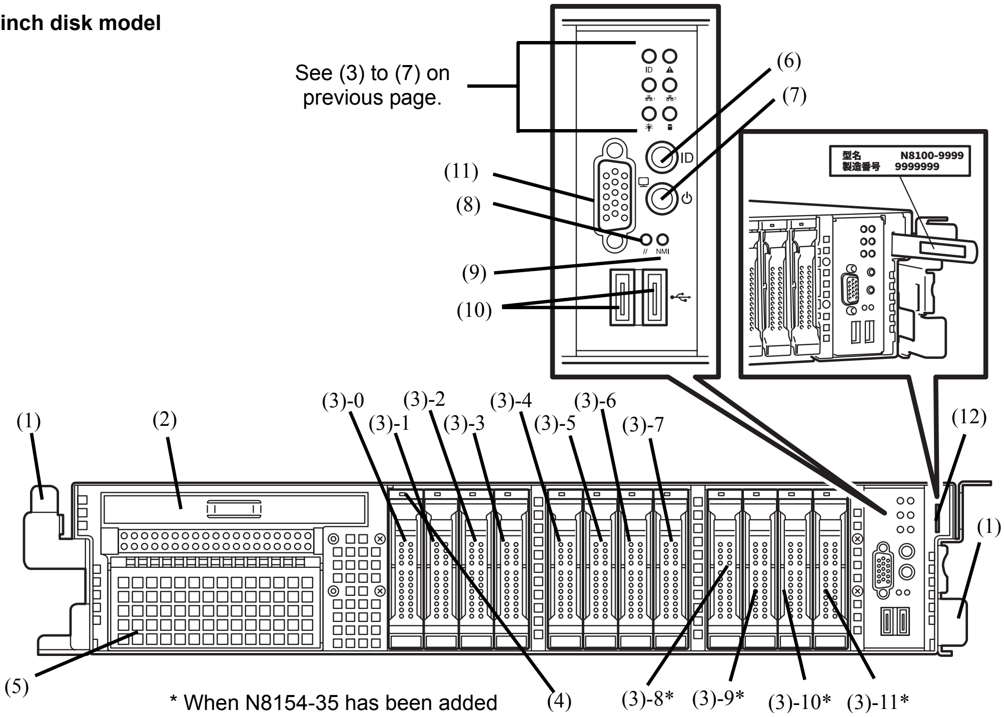
(5) DISK ACCESS LED (green/amber)
This LED is green during access to the internal hard disk drives. The LED turns amber when even one of the internal hard disk drives fails. (See page 8-5)

(6) Power LED (green)
This LED is illuminated in green after the power is turned on. Note that this LED blinks while the server is on standby (as described on page 8-3).

(7) UID LED (blue)
This LED goes on when the UID switch is pressed. (The LED also goes on or flashes when software issues a command.) (See page 8-5.)

Front View with Front Bezel Removed

2.5-inch disk model

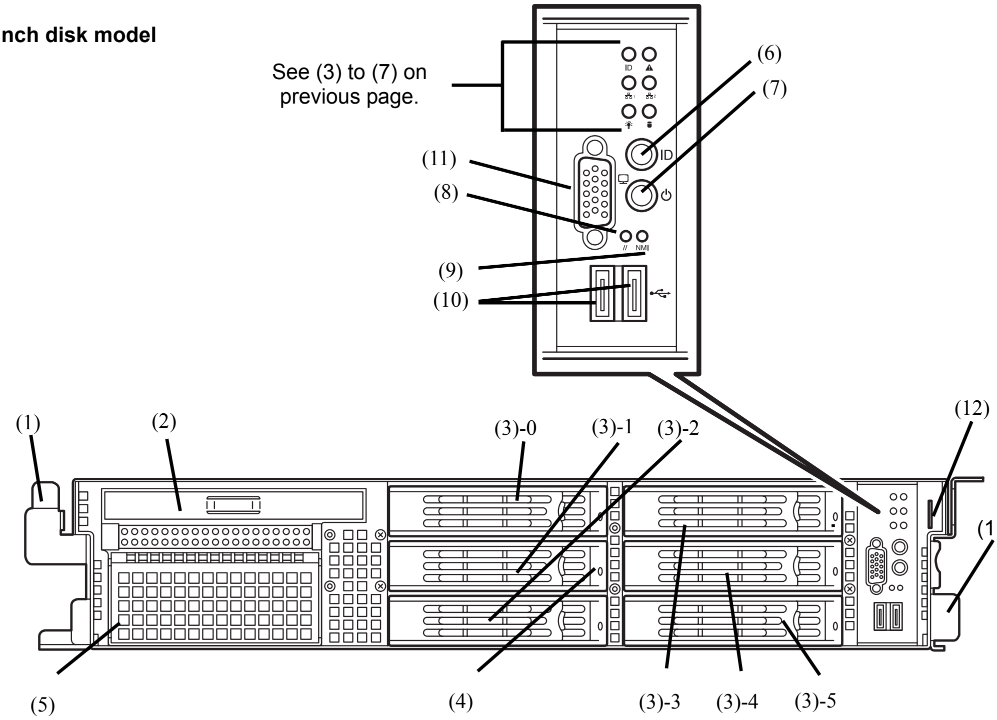


See (3) to (7) on previous page.

* When N8154-35 has been added

(6)
(7)
(11)
(8)
(9)
(10)
ID
NMI
型名 N8100-9999
製造番号 9999999
(1)
(2)
(3)-0
(3)-1
(3)-2
(3)-3
(3)-4
(3)-5
(3)-6
(3)-7
(12)
(1)
(5)
(4)
(3)-8*
(3)-9*
(3)-10*
(3)-11*

3.5-inch disk model



See (3) to (7) on previous page.

(6)
(7)
(11)
(8)
(9)
(10)
ID
NMI
(1)
(2)
(3)-0
(3)-1
(3)-2
(12)
(1)
(5)
(4)
(3)-3
(3)-4
(3)-5

(1) **Handles (1 at the right and left each)**
Hold the handles when dismounting/mounting the server from/in the rack.

(2) **Optical disk drive bay**
Attach an optional optical disk drive. (See page 2-24.)
One of the following drives will be installed, according to the model or the purchase order.
- DVD-ROM drive
- DVD Super Multi drive

(2)-1 Manual ejection hole
(2)-2 Disk access LED
(2)-3 Tray ejection button

(3) **Hard disk drive bays**
Bays that hold hard disk drives (For details, see page 9-7.) The last digit indicates the port number. In the standard configuration, all bays have a dummy tray.

(4) **DISK LED (green/amber)**
Hard disk drive LED. (See page 8-6.)
Each hard disk drive LED is green during access to the hard disk drive. The LED turns amber if the hard disk drive fails. The LED flashes switching back and forth between green and amber during build processing (only in RAID System).

(5) **Backup Device Bay**
This is where the optional DAT drive, AIT drive, and similar devices are installed. (For details, see page 9-71.)

(6) **UID (Unit ID) switch**
Press this switch to turn on/off the UID LEDs on the front and rear panels of the server. Pressing the switch once turns on the LEDs. Pressing it again turns them off. (See page 2-23.)
(The LED also goes on or flashes when software issues a command.)

(7) **POWER switch**
Press this switch to turn on/off the power. (See page 2-18.)
Pressing the switch once turns on the power, and the POWER LED goes on. Pressing it again turns off the power. Continuing to press the switch for 4 seconds or more forcibly turns off the power. (See page 8-59.)
* This server does not support sleep functions.

(8) **RESET switch**
Press this switch to reset the server. (See page 8-58.)

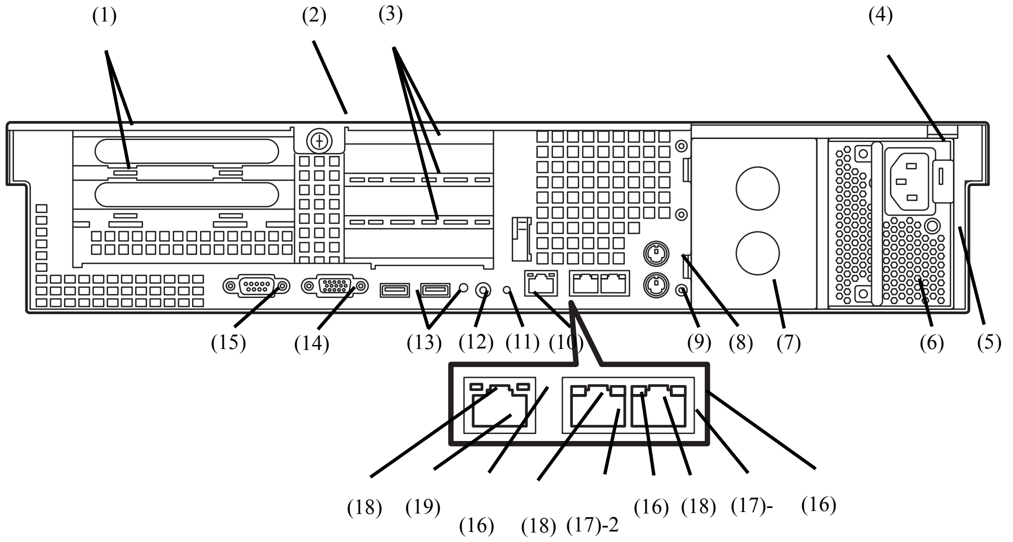
(9) **DUMP (NMI) switch**
Press this switch to dump system memory.

(10) **USB connectors**
Connect device compliant with the USB interface to the connectors. (See page 3-18.)

(11) **Monitor connectors**
This connector is used to connect a display. (For details, see page 3-18.)
This connector cannot be used if the back monitor connector is being used.

(12) **Slide tag**
A label indicating the N code and serial number of the server is attached.

Rear View



(1) Full-height PCI card slot (1B)
These slots are used to insert full-height PC cards. (For details, see page 9-51.) Starting at the top, these slots are 3B and 2B.

(2) Set screw
This screw is used to fix the logic cover in place.

(3) Low-profile PCI card slot (1C)
These slots are used to insert low-profile PCI cards. Starting at the top, these slots are 3C, 2C, and 1C.

(4) AC inlet
This socket is used to connect the power cord.

(5) AC power LED
This LED blinks in green when AC power is supplied from the power cord and lights up in green when the server is turned on. (For details, see page 8-9.)

(6) Power supply unit (power supply slot 1)
This unit supplies power to the server.

(7) Power supply unit expansion slot (power supply slot 2)
Install an optional power supply unit in this slot. (See page 9-20.)
In the standard configuration, a blank cover is attached.

(8) Mouse connector
Connect the mouse to this connector. (See page 3-18.)

(9) Keyboard connector
Connect the keyboard to this connector. (See page 3-18.)

(10) Dump (NMI) switch
Press this switch to obtain a memory dump.

(11) UID (Unit ID) switch
Use this switch to turn the UID LEDs on the front and back of the server on or off. Press the switch once to turn the LEDs on, and then press it again to turn them off. (For details, see page 2-23.)

(12) UID LED (blue)

This LED lights up when the UID switch is pressed. This LED can also turned on or set to the blinking status by using a software command.

(13) USB connectors

These connectors are used to connect devices that support the USB interface. (For details, see page 3-18.)

(14) Monitor connector

This connector is used to connect a display. (For details, see page 3-18.) This connector cannot be used if the front monitor connector is being used.

(15) Serial port connector (COM)

This connector is used to connect devices that support a serial interface. (For details, see page 3-18.)

Note that it is not possible to directly connect to a dedicated line

(16) Speed LED (green/amber)

This LED indicates the transmission speed of the LAN. (See page 8-9.)

(17) LAN connectors

Connect network systems on the LAN to the connectors (1000BASE-T/100BASE-TX/10BASE-T). (See page 8-8.)

The number "1" following the parenthesized number indicates LAN port 1, and the number "2" indicates LAN port 2.

If [Shared BMC LAN] is set to [Enabled] on BIOS SETUP, the LAN port 1 can be used as management LAN not only used as data transmission port. However, it is not recommended in consideration of performance and security, because the LAN port 1 may receive both normal data and management data. (See page 4-28.)

(18) LINK/ACT LED (green)

This LED indicates the access status of the LAN. (See page 8-8.)

(19) Management LAN port

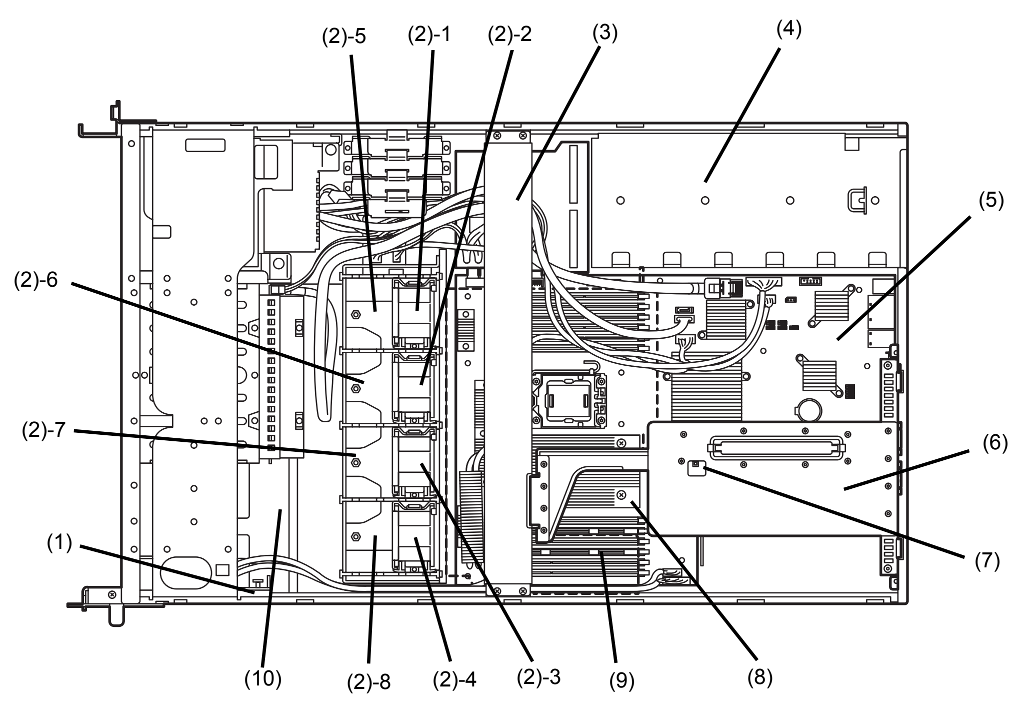
100BASE-TX/10BASE-T interface port used to manage the server via LAN. (See page 8-8.)

This port is used for connection with EXPRESSSCOPE Engine 2, and cannot be used as a data transmission port.

Internal View

The processor duct is not shown in the figure.

2.5-inch Disk Model



(1) **Front panel board**

(2) **Cooling fans**

(2)-1 FAN1R (2)-2 FAN2R (2)-3 FAN3R (2)-4 FAN4R

(2)-5 FAN1F (option) (2)-6 FAN2F (option) (2)-7 FAN3F (option) (2)-8 FAN4F (option)

(3) **Support bar**

(4) **Power supply**

(5) **Motherboard**

(6) **PCI riser card**

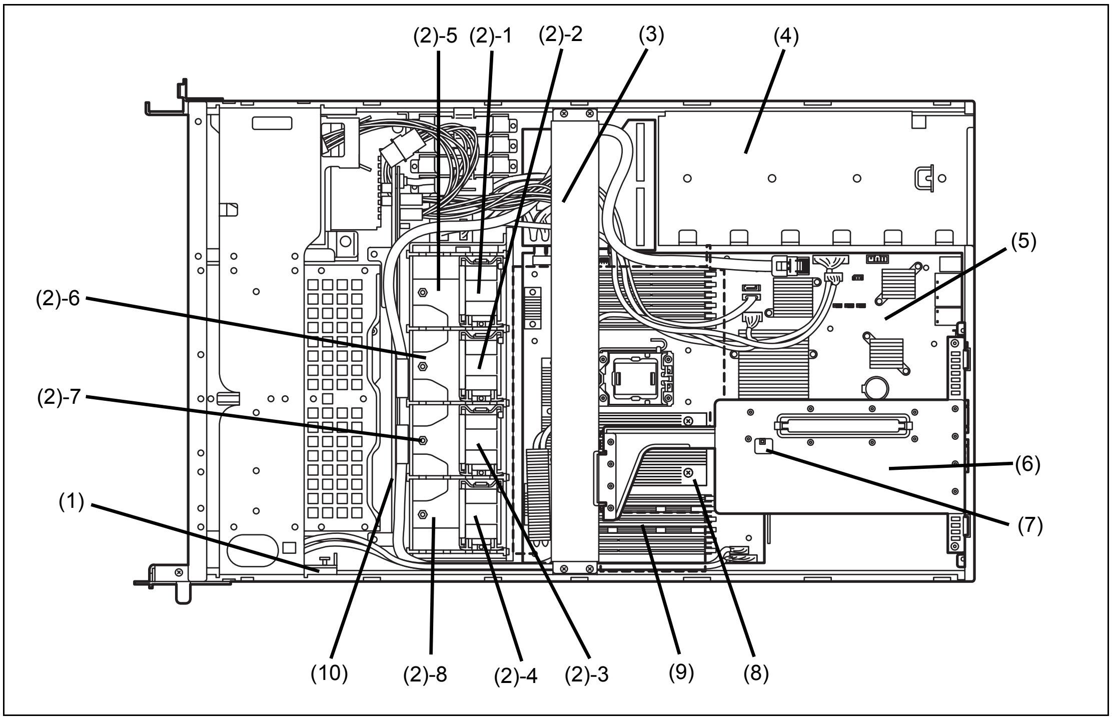
(7) **Cover-open sensor**

(8) **Processor (attached under the CPU and heat sink)**

(9) **DIMM (option)**

(10) **Backplane**

3.5-inch Disk Model

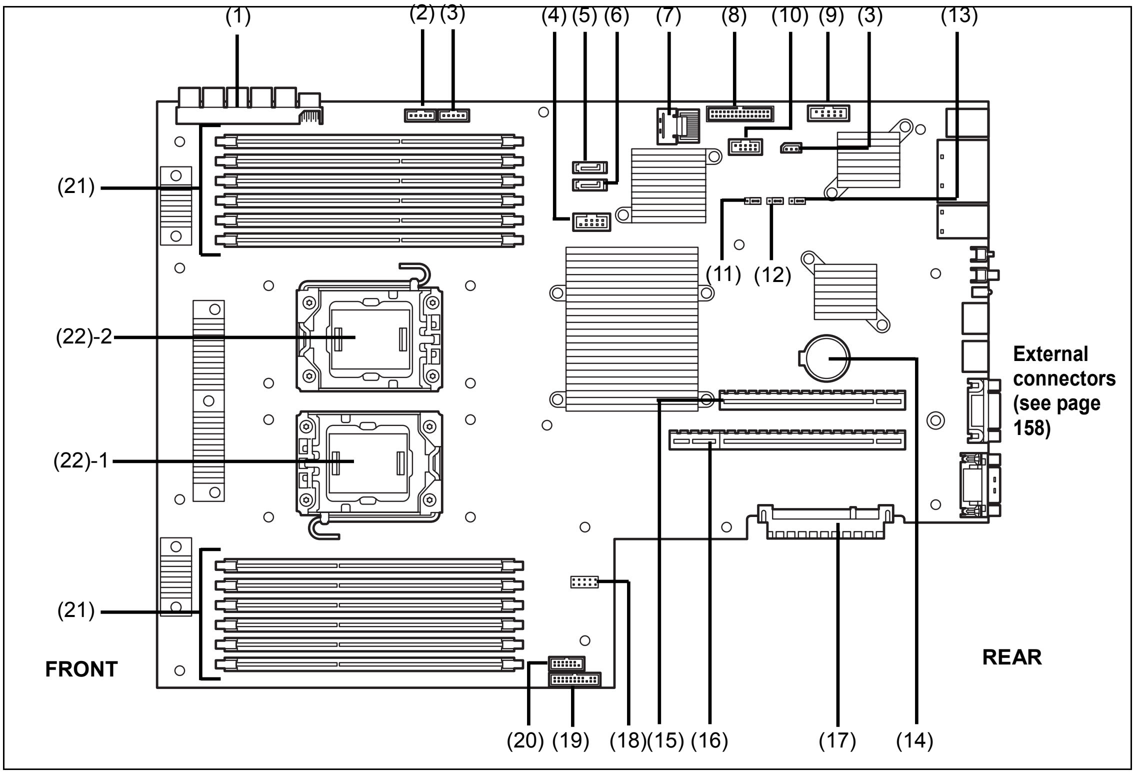


(1)	**Front panel board**
(2)	**Cooling fans**

(2)-1 FAN1R (2)-2 FAN2R (2)-3 FAN3R (2)-4 FAN4R
(2)-5 FAN1F (option) (2)-6 FAN 2F (option) (2)-7 FAN3F (option) (2)-8 FAN4F (option)

(3)	**Supporting bar**
(4)	**Power supply**
(5)	**Motherboard**
(6)	**PCI riser card**
(7)	**Top cover open sensor**
(8)	**Processor** (attached under the CPU and heat sink)
(9)	**DIMM (option)**
(10)	**Backplane**

MOTHERBOARD


(1)
(2)
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(9)
(3)
(13)
(21)
(22)-2
(22)-1
(21)
FRONT
(11)
(12)
External connectors (see page 158)
REAR
(20)
(19)
(18)
(15)
(16)
(17)
(14)

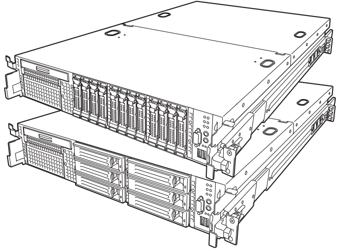
(1)	**Power connector**	
(2)	**USB backup device connector**	
(3)	**Unused connector**	
(4)	**USB connector (front)**	
(5)	**SATA DVD connector**	
(6)	**SATA backup device connector**	
(7)	**SATA connector**	
(8)	**Fan connector**	
(9)	**Optional COM connector**	
(10)	**HDD BP connector**	
(11)	**Unused jumper switch**	
(12)	**Password clear jumper switch** (see page 4-43)	
(13)	**CMOS clear jumper switch** (see page 4-43)	
(14)	**Lithium battery**	
(15)	**Connector for PCI riser card slot (for low-profile card)**	(See **PCI Card** on page 9-51.)
(16)	**Connector for PCI riser card slot (for full-height card)**	
(17)	**Connector for RAID controller**	
(18)	**USB memory module connector**	
(19)	**Front panel connector**	
(20)	**Front video connector**	
(21)	**DIMM (CPU) sockets** (see page 9-27)	
(22)	**Processor sockets** (22)-1 Processor #1 (CPU#1)	(22)-2 Processor #2 (CPU#2)

STANDARD FEATURES

The server you have purchased has the following features.

High performance

- Intel® Xeon® processor
  N8100-1650: 2GHz, 2 cores
  N8100-1644/1651: 2.13GHz, 4 cores
  N8100-1645/1652: 2.40GHz, 4 cores
  N8100-1646/1653: 2.66GHz, 4 cores
  N8100-1647: 2.26GHz, 6 cores
  N8100-1648: 2.93GHz, 6 cores
  N8100-1649: 3.33GHz, 6 cores
- High-speed memory access (DDR3 1333 supported)
- High-speed disk access
  (SATA300, or SSD SAS (Serial Attached SCSI))*1



Expandability

- PCI Express 2.0 (8 lanes): 2 slot (full height)
  PCI Express 2.0 (8 lanes): 1 slot (low profile)
  PCI Express 2.0 (4 lanes): 1 slot (low profile)*2
  PCI Express (4 lanes): 1 slot (low profile)
  PCI Express 2.0 (4 lanes): 1 slot (dedicated to RAID controller) *2
- Can be changed to PCI-X slot by using the optional riser card.
- Large memory of up to 192GB*3
- Up to two multi-processors are available for upgrade.
- Three network ports (one for management LAN)
- Hard disk drive bays
  2.5-inch disk model: up to 12 hard disk drives*4
  3.5-inch disk model: up to 6 hard disk drives
- Backup device bay provided as standard
- USB2.0 interface

Management utilities

- NEC ESMPRO
- NEC ExpressUpdate feature
- Remote monitoring feature (EXPRESSSCOPE Engine 2)
- RAID system management utility (Universal RAID Utility)
- Hard disk drive monitoring feature

Maintenance features

- Off-line maintenance utility
- Memory dump feature using the DUMP switch

Power saving and noiseless design

- Power monitoring feature
- Power control feature
- High-efficiency power supply supporting 80 PLUS®
- Fan control appropriate to environment, work load, and configuration
- Noiseless design

High reliability

- Memory monitoring feature (error correction/error detection)
- Memory degeneracy feature (logical isolation of a failed device)
- Memory x4/x8 SDDC feature
- Memory mirroring/LockStep feature (x8 SDDC)/memory sparing feature
- Bus parity error detection
- Temperature detection
- Error notification
- Internal fan monitoring feature
- Internal voltage monitoring feature
- Redundant power supply (hot-swappable)
- Onboard RAID controller (disk array) (also supported as an option)
- Auto-rebuild feature (hot-swappable)
- BIOS password feature
- Mechanical security lock
- Redundant fans

Many built-in Features

- Redundant power supply feature (with optional power supply unit installed)
- El Torito Bootable CD-ROM (no emulation mode) format supported
- Power switch mask
- Software power-off
- Remote power-on feature
- AC-Link feature
- Remote console feature
- Front monitor connector

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis (T&D)

Easy setup

- NEC EXPRESSBUILDER (system setup utility)
- Parameter File Creator
- SETUP (BIOS configuration utility)

*1. The 3.5-inch HDD model only supports SATA.
*2. A connector for 8 lanes is used.
*3. When two CPUs are used. The maximum memory capacity is 96GB when one CPU is used.
*4. Eight slots in the standard configuration when the additional N8154-35 HDD cage is installed

Peripheral Bays

The system supports a variety of standard PC AT-compatible peripheral devices. The chassis includes these peripheral bays:

- Three 5.25-inch file bays for installing 5.25-inch peripheral devices such as optional tape drives. (An optical disk drive is factory-installed.)
- The 3.5-inch disk cage can contain up to four SATA or SAS hard disk drives.
  The 2.5-inch disk cage can contain up to eight SAS hard disk drives.

AC LINK Feature

When the power cord of the server is connected to an uninterruptible power supply (UPS) unit, the server supports the power linkage feature that enables control over the power supply from the UPS to the server. The AC LINK feature can be enabled or disabled with Power Management Setup in the Server menu of the BIOS setup utility, "SETUP." (See Chapter 4.)

Security

The BIOS setup utility provides a number of security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, access to the system is allowed only after the user enters the correct password(s). For example:

- Set and enable an administrative password.
- Set and enable a user password
- Check the user account when entering the BIOS setup utility or booting the system.

NEC EXPRESSBUILDER

The DVD of this server's accessories contains a setup utility called "NEC EXPRESSBUILDER".

The major functions of the NEC EXPRESSBUILDER are:

- To install the Operating System.

  "Express Setup" helps you to install the Windows Operating System. (See Chapter 5)

- To diagnose the server.

  NEC EXPRESSBUILDER includes System Diagnostics to check this server. (See Chapter 7)

- To create a driver disk.

  Use this function to create "OEM-disk for Windows" used for a manual installation of Windows. (See Appendix D-F)

- To update System BIOS

  Use this function to update the server's system BIOS or firmware. (See Chapter 8)

- To update Windows system*

  "Update the system" in the Autorun menu (See Chapter 6) updates the several drivers of Windows on the server.

- To install several management utilities*

  NEC EXPRESSBUILDER includes the management utilities (NEC ESMPRO, Universal RAID utility and so on). You can install the applications from NEC EXPRESSBUILDER. (See Chapter 6)

- To read several documents*

  You can refer to the documents from the Autorun menu. (See Chapter 6)

  * These functions are available on Windows system.

NOTE: Some features among those listed above can be used from the remote computer via cross cable (COM), or LAN. See Chapter 6 for details.

NEC ESMPRO

The NEC ESMPRO is server management software that runs on the OS.

The NEC ESMPRO Manager is a management software that enables you to manage and monitor the servers remotely. To use this software, it is required to install apposite bundled software on the server.

NOTE: For details of major functions of the NEC ESMPRO, system configuration and setups with the NEC ESMPRO, see Chapter 6. Available functions of the NEC ESMPRO depend on the OS you install. Ask your service representative for details.

Maintenance Tools

The Maintenance Tools is used for maintenance and fault analysis of the server. This tool is usually used by the service representative.

System Diagnostic Utility

The system diagnostic utility contained in the NEC EXPRESSBUILDER is useful to detect hardware failures. See Chapter 7 for details.

Remote Management

The server may be monitored and managed via LAN/WAN by using EXPRESSSCOPE Engine 2 and NEC ESMPRO Manager utility stored in NEC EXPRESSBUILDER DVD-ROM.

The EXPRESSSCOPE Engine 2 provides the following features:

- Monitoring of temperature, voltage, fans, and electric power status
- Monitoring of power supply unit
- Monitoring of hard disk drives
- Generation of SEL (system event log) at occurrence of hardware failure
- Monitoring of the system management watchdog timer
- Monitoring of the periodic SMI timer
- Remote management by using Web browser (e.g., resetting the server, power on/off, viewing System Event Log (SEL))
- Remote KVM and remote device features (A separately priced remote management license is required.)
- Remote management via LAN/WAN by using NEC ESMPRO Manager and centralized management of several systems

For more information about remote management using Web browser, remote KVM feature, and remote device feature, refer to the "EXPRESSSCOPE Engine 2 User's Guide" stored in NEC EXPRESSBUILDER DVD-ROM.

NOTE: To use the Remote Management Extended License (N8115-03), visit our Web site to see the latest information about remote console/remote media feature.

USING YOUR SERVER

This section describes the basic operations of the server including how to use devices such as the optical disk drive.

Installing or Removing the Front Bezel

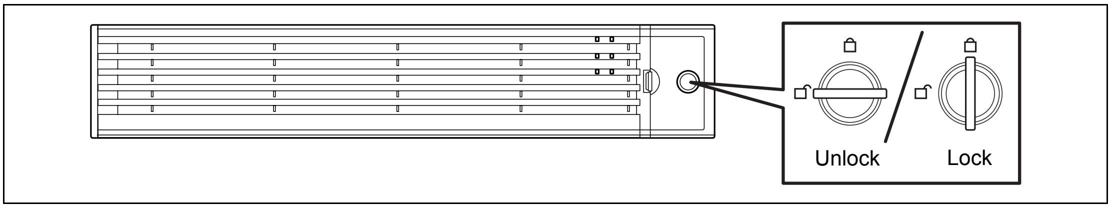
When turning the power of the server on/off, accessing the optical disk drive and the backup file device, or installing or removing a hard disk drive on or from a hard disk drive bay, first remove the front bezel.

IMPORTANT:

The front bezel can be opened only when you unlock it by using the attached security key.

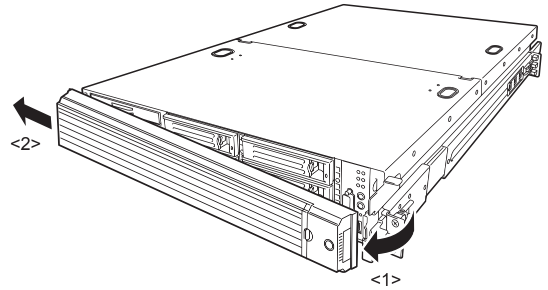
Do not press the POWER switch when installing or removing the front bezel.

1. Insert the attached security key into the key slot and turn the key to the front bezel side while pressing it lightly to release the lock.

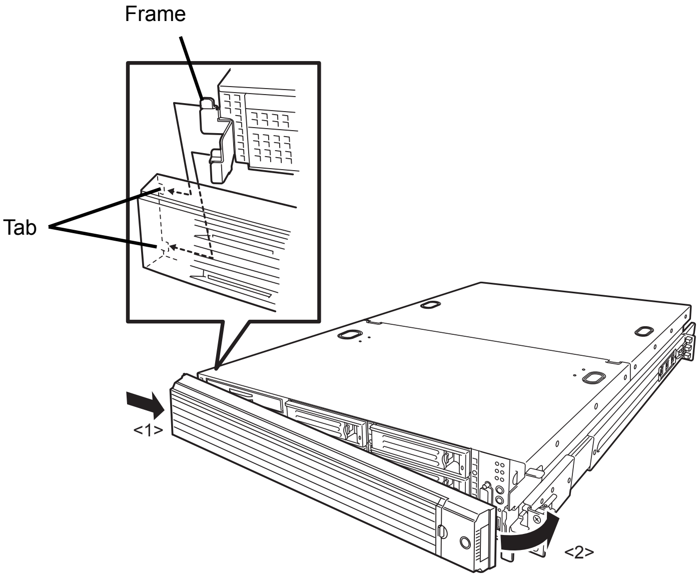


2. Hold the right end of the front bezel carefully to pull it toward you.

3. Slide the front bezel to the left a little to release the tab from the frame and then remove the front bezel from the server.



To install the front bezel, latch the tab at the left side of the front bezel on the server frame. After the installation, lock the front bezel by using the security key.



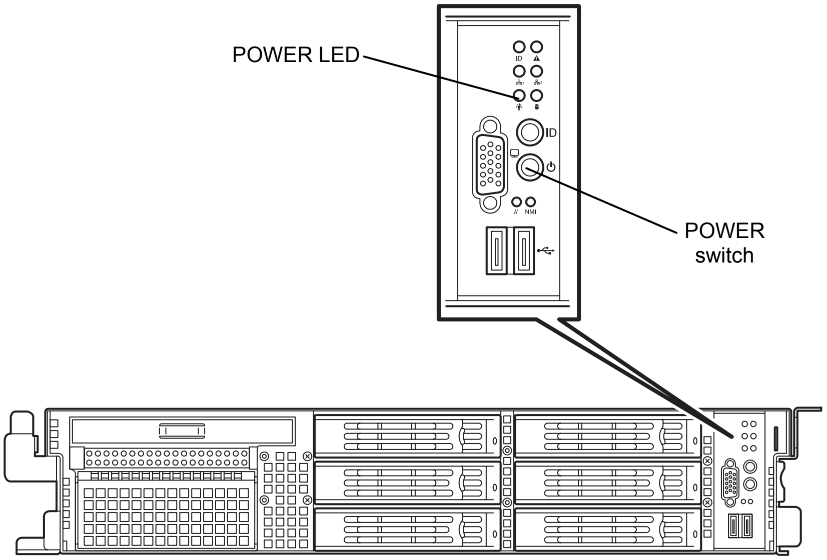
POWER Switch

Use the POWER switch to turn on/off the server.

Power On

Press the POWER switch on the front of the computer chassis.

The POWER LED lights in green.



IMPORTANT:

- If the power cord is connected to a power control device such as a UPS (Uninterruptive Power Supply), make sure that the power control device is powered.
- The server management logic on your system board monitors and logs system voltage changes. When plugging the power cord to the system, you may experience 30 seconds delay from the time you press the POWER switch on the front panel. This is normal system operation and is required by the server management logic.
- Always allow POST to complete before powering down your system.

POST

POST (Power On Self-Test) is the self-diagnostic program stored in the system memory.

When you power on the server, the system automatically runs POST to check the mother board, ECC memory module, CPU module, keyboard, and mouse. POST also displays messages of the BIOS Setup utility, such as the start-up message, while in progress.

NEC

With the factory setup of the server, the NEC logo appears on the display unit while POST is in progress. (To display the POST check results, press **Esc**.)

You do not always need to check the POST check results. Check the messages that POST displays when:

- you use the NEC Express server for the first time.
- the server appears to fail.
- the server beeps many times between power-on and OS start-up.
- an error message appears on the display unit.

POST Execution Flow

The following describes the progress of POST in the chronological order.

IMPORTANT:

- Do not power off the server while POST is in progress.
- Do not make key entries or perform mouse operations while POST is in progress.
- Some system configurations may display the message "Press Any Key" to prompt a key entry. This message is driven by BIOS of an installed optional board. Make sure to read the manual that comes with the optional board before any key entry.
- Powering on the server, after you installed or removed an optional PCI board or moved it to another slot, may display the message that indicates incorrect board configuration and suspend POST.
  In such a case, press **F1** to continue POST. Board configuration can be made using the utility described later.

---

1. After a few seconds from power-on, POST starts checking the memory. The count message of the basic and expansion memory appears at top left on the display unit screen. The memory check may takes a few minutes to complete depending on the memory size of the server. Also, it may take approximately one minute for the screen display to appear after rebooting the server.
2. Some messages appear upon completion of the memory check. These messages appear to indicate that the system has detected the CPU, keyboard, and mouse.
3. After a few seconds, POST displays the following message prompting you to launch the BIOS SETUP utility, stored in the system memory of the server. This message appears at bottom left on the screen.

   ```
   Press <F2> to enter SETUP or Press <F12> to boot from Network
   ```

   Launch the BIOS setup utility when you need to change the settings to meet the requirements for the server. As long as the above message is not displayed with an error message, you don't have to launch the utility. (Ignore the message. POST will automatically proceed.)

   To launch the BIOS setup utility, press **F2** while the above message is displayed. See Chapter 4 for setup and parameters.

   The server automatically restarts POST all over again when you exit the SETUP utility.

4. If your server uses Onboard RAID Controller, the following message is displayed to prompt you to run RAID utility.

   ```
   Press <Ctrl><M> to Run LSI SoftwareRAID Configuration Utility
   ```

   Press **Ctrl** + **M** to run the utility. For detail explanation, see Chapter 4 for detail.

   > **IMPORTANT:** The LSI Software RAID Configuration Utility is used to manage the data stored in hard disk drive, or for maintenance. See Chapter 4 for detail.

5. If the POST detects the optional add-in card, it displays the message prompting you to launch the add-in card BIOS configuration utility. (Ignore the message. POST will automatically proceed a few seconds later.)

   Refer to the manual that comes with the optional add-in card for detail.

6. If you set a password using the BIOS SETUP utility, the password entry screen appears upon successful completion of POST.

   Up to three password entries will be accepted. Three incorrect password entries disable the server to boot. In such a case, turn off the power and wait about ten seconds before turning on to boot the server.

   > **IMPORTANT:** Do not set a password before installing an OS.

7. The OS starts when POST completes.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen or emits beep code. See Chapter 8 for POST error codes.

> **IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Power Off

Follow the procedure below to power off the server. If the power cord of the server is connected to a UPS, refer to the manual that comes with the UPS or the manual for the application that controls the UPS.

IMPORTANT: Always allow POST to complete before turning off the server.

1. Shut down the OS.
2. Press the POWER switch on the front of the server.
   The POWER/SLEEP lamp goes out.
3. Power off peripheral devices.

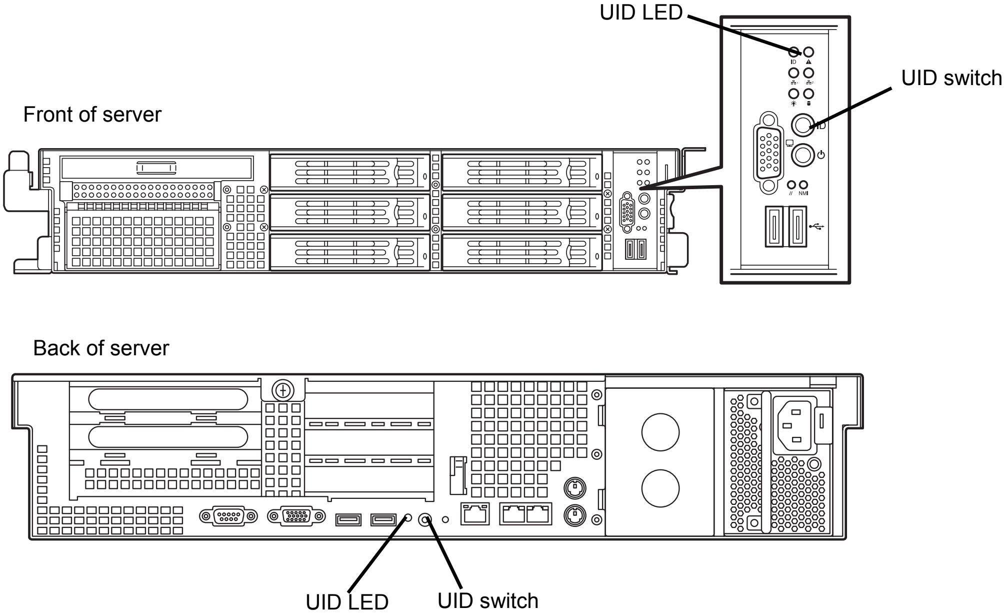
NOTE: The standby function of Windows Server is not available. Do not select "Standby" in the Windows shutdown menu.

IDENTIFICATION OF SERVERS ~ UID SWITCH ~

A UID (Unit ID) LED is provided on the front panel and rear panel. If more than one server is mounted in a single rack, the LED identifies the server you are performing maintenance on.

The UID LED turns on or blinks when the UID (Unit ID) switch on the front panel is pressed. It goes off when the switch is pressed again.

Maintenance from the rear of the rack has to be carried out in a dark, narrow space. The interface cable of a server or power supply unit in normal state may be disconnected by accident in this situation. To prevent this problem, you should start maintenance after confirming the target server by using the UID switch.



OPTICAL DISK DRIVE

The server is provided with the optical disk drive bay on its front to read data from a disc. The following optical disk drives can be installed in this server:

- DVD-ROM drive (option)
  This drive can read a variety of optical discs.
- DVD Super Multi drive (option)
  This drive can read and write a variety of optical discs.

⚠ CAUTION

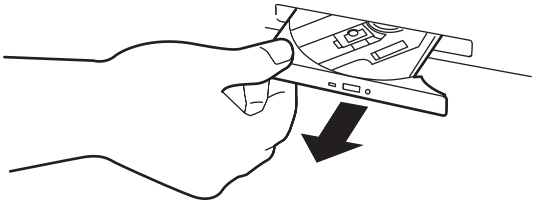
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

■ Do not leave the drive open.

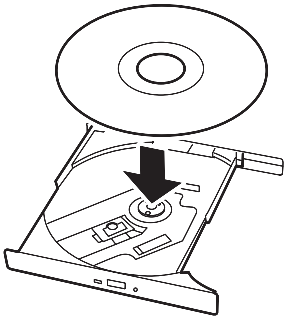
Insert a disc in the optical disk drive using the following procedure:

1. Confirm that the power of the server is on (the POWER LED should be lit) before inserting the disc in the optical disk drive.
2. Press the Eject button on the front of the optical disk drive.

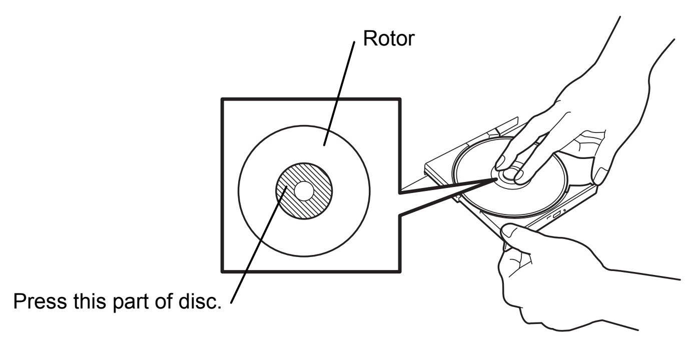
   The tray comes out a little.
3. Hold the tray lightly and pull it out toward you until the tray stops.



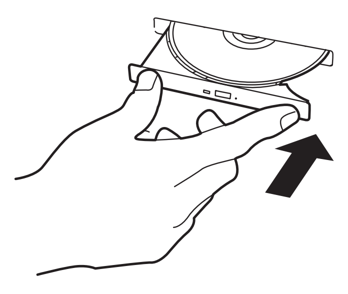
4. Put the disc on the tray carefully and securely with the character printed surface facing upward.



5. As shown in the figure below, hold the tray with a hand and press the disc with fingers of another hand to make the hole of the disc fit to the rotor at the center of the tray.

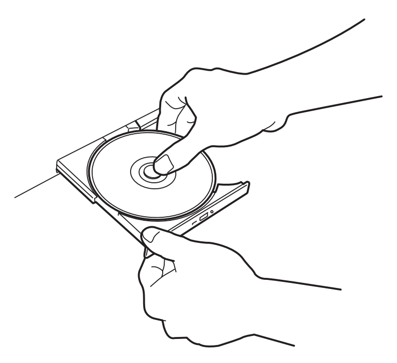

Rotor
Press this part of disc.

6. Push the front of the tray lightly to return it into the drive.



IMPORTANT: If a noisy sound in driving the optical disk drive occurs after inserting a disc, insert it again correctly.

To take out the disc from the optical disk drive, press the Eject button in the same way as when inserting the disc to make the tray come out.

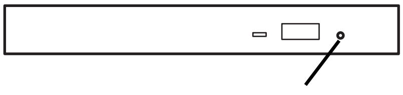


If the access LED is lit, the disc is being accessed. Confirm that the access LED is not lit before pressing the Eject button.

As shown in the figure below, hold the tray with one hand and hold the edges of the disc lightly with the fingers of the other hand while the pushing down on the rotor at the center of the tray to remove the disc from the tray.

After taking out the disc, return the tray into the drive.

If you fail to eject the tray with the Eject button and remove the disc from the server, follow the procedure below.



1. Press the POWER switch to power off the server. (The POWER LED goes off.)
2. Insert a metal pin of approximately 1.2 mm in diameter and 100 mm in length (a straightened large paper clip will suffice) into the manual ejection hole on the right front of the optical disk drive and gently push it in until the tray is ejected.

IMPORTANT:

- Do not use a toothpick or plastic stick that is easy to break.
- If the above procedure does not let you take out the disc, contact your service representative.

3. Hold the tray and pull it out.
4. Take out the disc.
5. Push the tray back into position.

NOTE: Use of Discs

Keep the following notes in mind when using discs in the server:

- Discs that do not conform to CD standards may not be able to be played back.
- Do not drop the disc.
- Do not place anything on the disc or bend the disc.
- Do not attach any label to the disc.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the disc with its printed side upward and gently put it on the tray.
- Do not scratch the disc or write anything directly on it with a pencil or ball-point pen.
- Keep the disc away from cigarette smoke.
- Do not leave the disc in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- If the disc becomes dusty or fingerprinted, wipe the disc from the center to the edge with a dry soft cloth slowly and gently.
- Use CD cleaner to clean the disc. Do not use record spray/cleaner, benzene, or thinner.
- Keep the disc in a disc case when not in use.

Flash FDD

A Flash FDD is a device that has capacity compatibility with a floppy disk drive.

One Flash FDD can be connected to a USB connector of this server. If a floppy disk drive is connected to this server, be sure to disconnect it.

⚠ CAUTION

⚠ **Be extremely careful not to lose the Flash FDD or have it stolen.**

If the Flash FDD is lost, stolen, misappropriated, or fraudulently obtained, there is a risk of leaking confidential information to a third party. NEC assumes no responsibility for damages caused by leaking confidential information in this way.

IMPORTANT:

- The status of the write protection switch of the FLSH FDD from before it is connected to this server is applied. Therefore, flipping this switch after connecting the Flash FDD has no effect. If it is necessary to flip this switch during use, temporarily disconnect the Flash FDD from the server, and then flip the switch.
- Be careful not to accidently slide the write protection switch while connecting the Flash FDD to or disconnecting it from the server.

Notes

The Flash FDD is only intended as a temporary means of performing processing such as reading device drivers during installation, so do not use the FDD to back up data.

Compensation for recorded data

NEC will not pay compensation for data recorded on the Flash FDD if the data is lost.

Notes on handling the Flash FDD

- Do not turn off the server while the access LED of the Flash FDD is blinking.
  Turning off the server at this time can cause a failure or data corruption.
- The Flash FDD is a consumable.
  → If the Flash FDD causes an error, use a new Flash FDD.
- The Flash FDD cannot be connected by way of a USB hub.
  Directly connect the Flash FDD to a USB connector of the server.
- Before touching the Flash FDD, discharge static electricity from your body by touching a nearby metal object (such as a doorknob or aluminum frame).
- Do not disassemble the Flash FDD.
- Do not apply a strong force to the Flash FDD.
- Do not place the Flash FDD in an area directly exposed to sunlight or near a heater.
- Do not handle the Flash FDD while eating, drinking, or smoking. Also, be careful not to get thinner, alcohol, or other corrosive substances on the Flash FDD.
- Be careful when connecting the Flash FDD to the server.
- Do not move the server or Flash FDD while the Flash FDD is inserted into a server USB connector. Doing so might cause a Flash FDD failure.
- After using the Flash FDD, disconnect it from the server.

Chapter 3

Setting Up Your Server

This chapter describes how to set up the server appropriate for your system, on a step-by-step basis.

SETUP FLOW

Follow the flowchart below to set up the server.

Selecting the server site

Select a suitable site for the server and assemble the 19-inch rack assembly.

⇩

Unpacking the system

Unpack the server and accessories from the chipping carton box.

⇩

Install the server

Install the server into the rack assembly.

⇩

Connecting peripheral devices

Connect peripheral devices to the server.

⇩

Connecting the power cord

Connect the power cord to the server.

⇩

Turning on the server

Power on the server to start software setups. Setups depend on the optional internal devices installed and the peripheral devices connected.

⇩

Installing the operating system

Install an operating system to the server. See Chapter 5.

⇩

Installing the utilities

Install the utilities in the provided NEC EXPRESSBUILDER DVD. See Chapter 6.

⇩

Making backup copies of system information

After all the system setup procedures are completed, make backup copies of system information.

System information is required for recovering the server from the trouble or after replacing the system board.

SELECTING SERVER SITE

To use the server, install it on a standard EIA 19-inch rack assembly.

Refer to the documentation attached to the rack or contact your service representative for the installation of the server on the rack.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not use the server in any unapproved place.
- Do not connect the ground line to a gas pipe.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Do not carry or install the server only by a single person.
- Do not install the server where the load may be concentrated on a specific point.
- Do not install any component on the server only by a single person.
- Insert the hinge pins completely.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not provide the wiring exceeding the rating power.
- Do not use the server in a place where corrosive gases exist.

Do not install the rack in the places listed below. Installing the rack or mounting the server on the rack in such a place may cause some malfunction to occur.

- Narrow space from which devices cannot be pulled out from the rack completely
- Place that cannot bear the total weights of the rack and devices mounted on the rack
- Place where stabilizers cannot be installed or where the rack can be installed only after the practice of proper earthquake-resistant construction
- Place of uneven or slanting floor
- Place of drastic temperature change (near a heater, air conditioner, or refrigerator)
- Place where intense vibration may be generated
- Place where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist.
  Place where the air (or dust) includes components accelerating corrosion (ex. sulfur, sodium chloride) or conductive metals.
  Place where chemicals may be accidentally sprayed over
- Place where a carpet not subject to anti-static process is laid.
- Place where some objects may be fallen on the rack
- Place near a device generating intense magnetic field (such as a TV, radio, broadcast/communication antenna, power transmission wire, and electromagnetic crane) is placed (If unavoidable, contact your service representative to request proper shield construction.)
- Place where the power cord of the server must be connected to an AC outlet that shares the outlet of another device with large power consumption.
- Place near equipment that generates power noise (e.g., contact spark at power-on/power-off of commercial power supply through a relay). If you must install the server close to such equipment, request your service representative for separate power cabling or noise filter installation.

IMPORTANT: Increase in temperature within rack and air flow

If more than one server are installed on the rack or the ventilation within the rack is not enough, the temperature in the rack may be raised by the heat generated from the units to be higher than the operation temperature of the server (10 to 35°C).

It causes the server to operate improperly. Review the air flow within the rack or in the room and take sufficient measures so that the temperature within the rack does not exceed the warranted temperature range during the system operation.

The server takes in the air from the front and exhausts it to the rear.

INSTALLING THE SERVER

This subsection provides the instructions for installing the server into a rack cabinet. (This subsection also describes the removal procedures.)

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not use any rack which does not conform to the relevant standard.
- Always use the server in the specified place.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

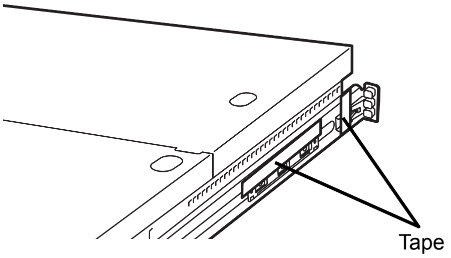
- Do not install/remove the server in/from the rack only by a single person.
- Do not install the server on the rack leaving the cover removed.
- Do not pinch your finger with mechanical components.
- Do not apply any load on the server being pulled out from the rack.

Installation

This server can be installed in either the NEC rack or a third vendor's rack. Take the following steps to install the server in the rack.

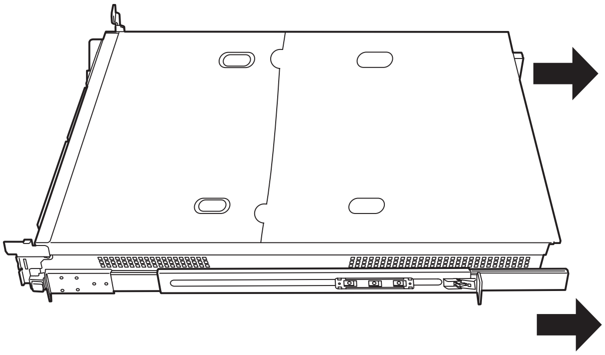
- Preparation for installation

  When shipped from factory, the left and right slide rails are fixed with tapes at the front and side faces to prevent from falling off during transportation. Peel off the tape before you install the server in the rack.

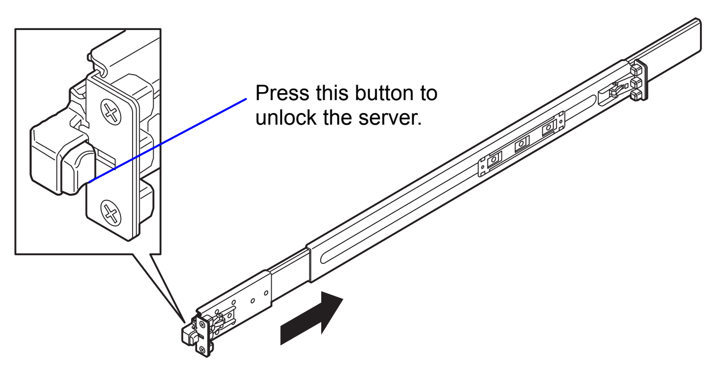


Removing Rail Assemblies

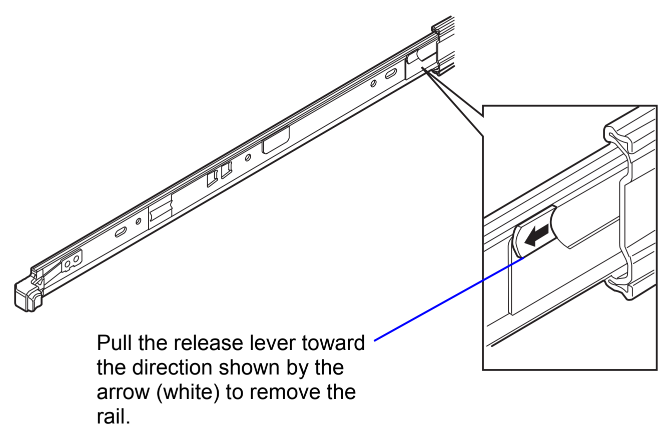
1. Remove the sliding rails from left and right sides of the server.



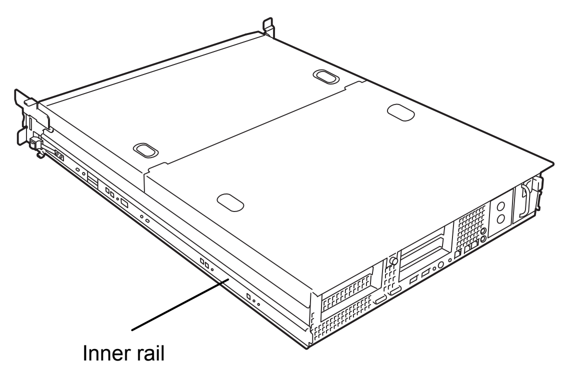
2. While pushing the unlock button on the front of the server, hold the rails and slowly move them toward the rear of the server.


Press this button to unlock the server.

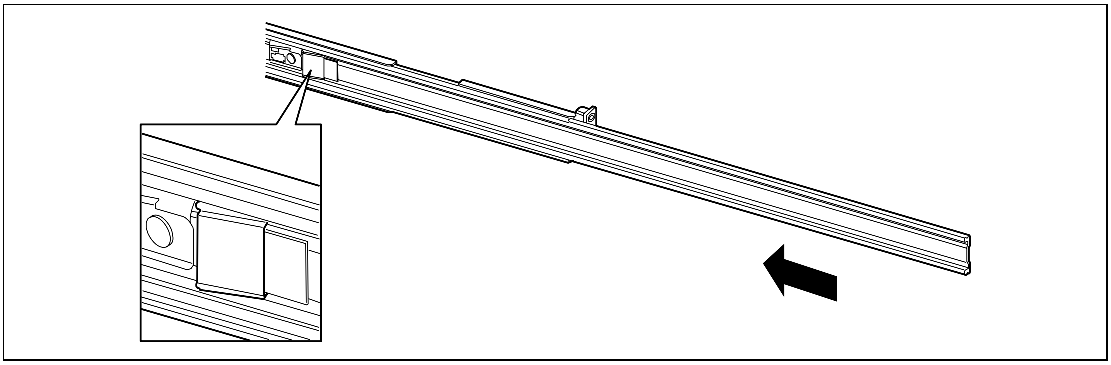
3. After a while, the rails are locked with clicking sound. Pull the release levers on the left and right sides of the server toward direction indicated by an arrow (white) in the figure, and remove them from the server while unlocking it.


Pull the release lever toward the direction shown by the arrow (white) to remove the rail.

4. Only the inner rails remain screwed to the server when the rail assemblies have been removed.



5. While pushing the levers, move the removed rail assemblies toward the direction indicated by an arrow in the figure, to restore the original position.



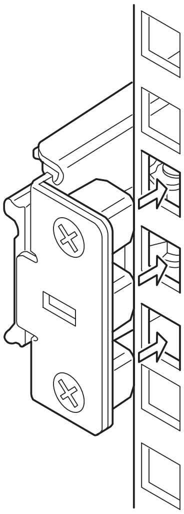
IMPORTANT:

- The removed rail assemblies are to be installed on the inner rails later.
- Be very careful not to get your finger caught in the levers or rails.

Installing Rail Assemblies

1. Insert the square projection of the rail assembly into the angle hole on the 19-inch rack until it is locked with clicking sound.

   The figure below shows the right side (front) of the rack. Install the rail assemblies to the right side (rear), and left side (front and rear) of the rack in the same procedure.



Make sure that the rail assembly is installed at the same level as the other slide rail assembly already installed.

NOTES:

- There may be some backlashes in the front and rear, however, it is not a deficiency.
- Make sure that the rail assembly is surely locked to the rack.

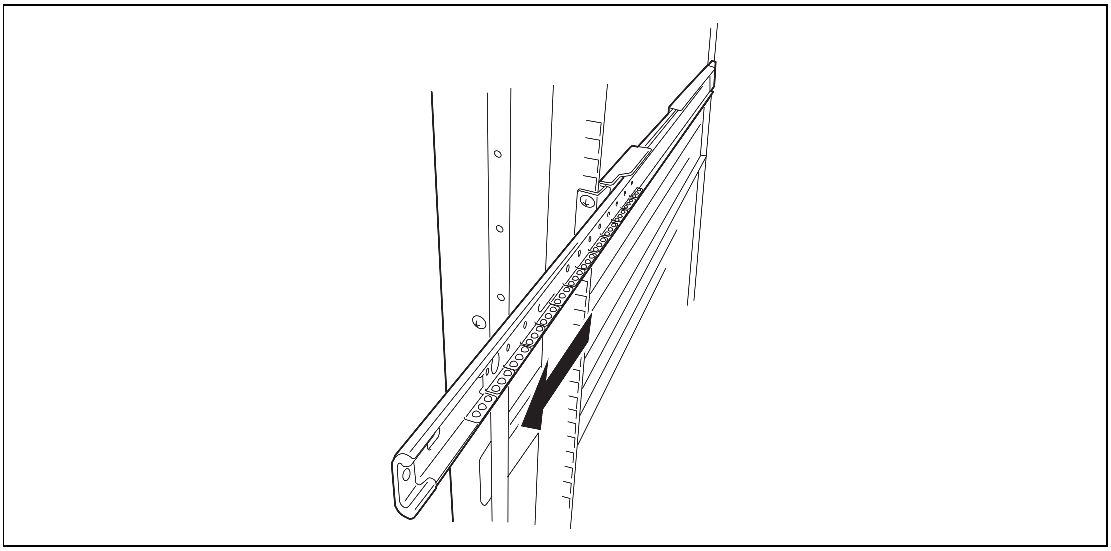
Installing the Server

⚠ CAUTION

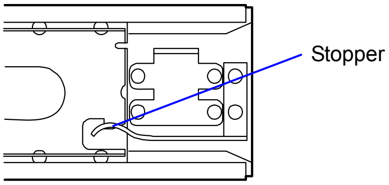
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Do not lift the server only by a single person.
- Do not pinch your finger with mechanical components.

1. Pull out the sliding rails of the right and left rail assemblies until they are locked.

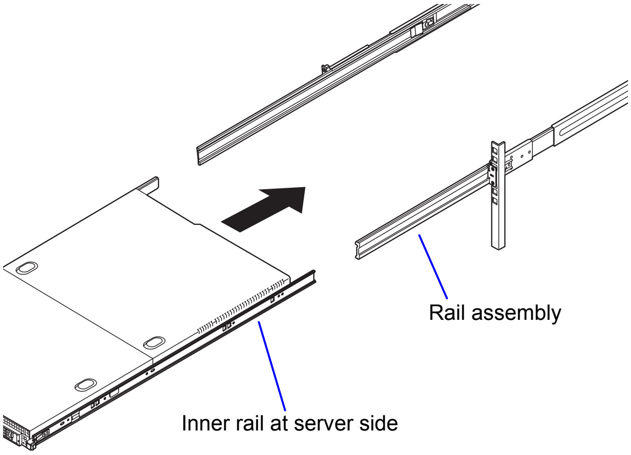


NOTE: Make sure that the sliding rails are surely locked by the stopper.



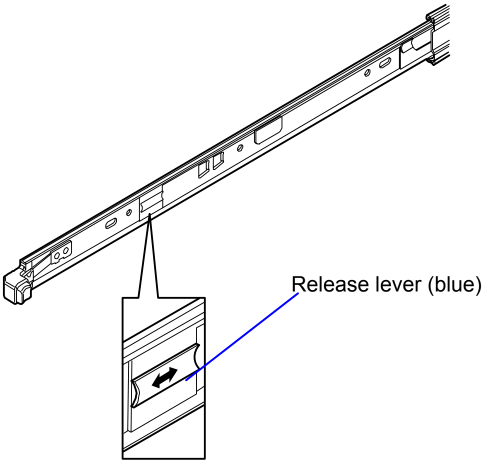
2. At least two persons are required to install the server. Securely hold the server and install it in the rack.

Firmly fit the inner rails on the sides of the server into the rail assemblies that are installed on the rack, and then slowly push the server into the rack.


Rail assembly
Inner rail at server side

3. If the server is locked on its way into the rack, slowly push it in while pressing the release levers (blue) on the right and left sides of the server forward or rearward.

When the server is completely pushed into the rack, the server is locked.


Release lever (blue)

IMPORTANT:

- Be very careful not to get your finger caught in the levers or rails.
- Insert both sides of inner rails straight into the rack.
- Hold the thumbscrews on both sides of the server, and install the server carefully while making sure the installation position.

NOTES:

- At the first installation, you may feel strong friction in pushing because the mechanical components cannot be completely engaged with each other. Push the server intensely.
- If the installation is incomplete, either of rails may not go further on its way. In such a case, pull out the server completely until it is locked. Then, push the server in while unlocking the right and left sides of it.

---

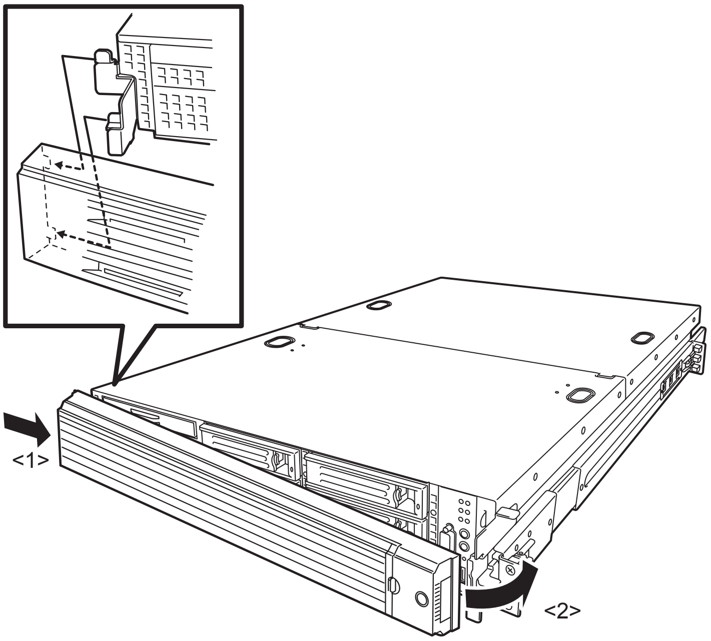
4. Make sure that the sliding rails move smoothly by pulling the server out of the rack and pushing it in several times.

NOTES:

- To install the server in the location adjacent to the other device, pay attention to interference. If the installing server disturbs the other devices already been installed, adjust the position, and install the rail assembly again.
- Make sure that the sliding rails move smoothly. If the sliding rails are stuck to the rack frame and do not come out, reinstall them.

Installing the Front Bezel

1. Install the front bezel so that the left tab on the front bezel engages with the chassis frame.



Removal

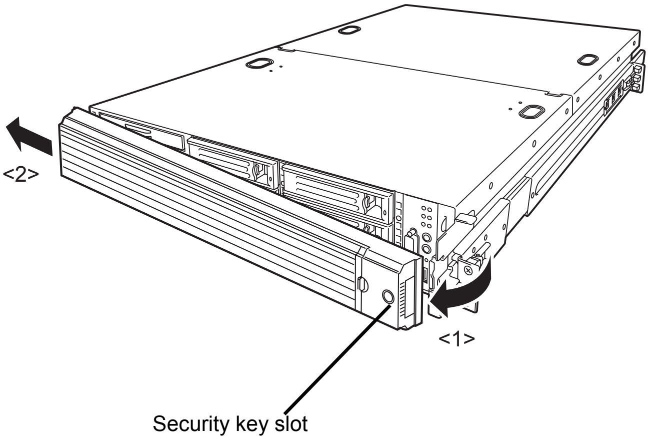
Remove the server from the rack in the following procedure.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Do not install/remove the server in/from the rack only by a single person.
- Do not pinch your finger with mechanical components.
- Do not apply any load on the server being pulled out from the rack.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not pull out the server from the rack while it is operating.

1. Make sure that the server is off-powered, and disconnect the power cords and all the interface cables from the server.
2. Unlock the front bezel with the security key.

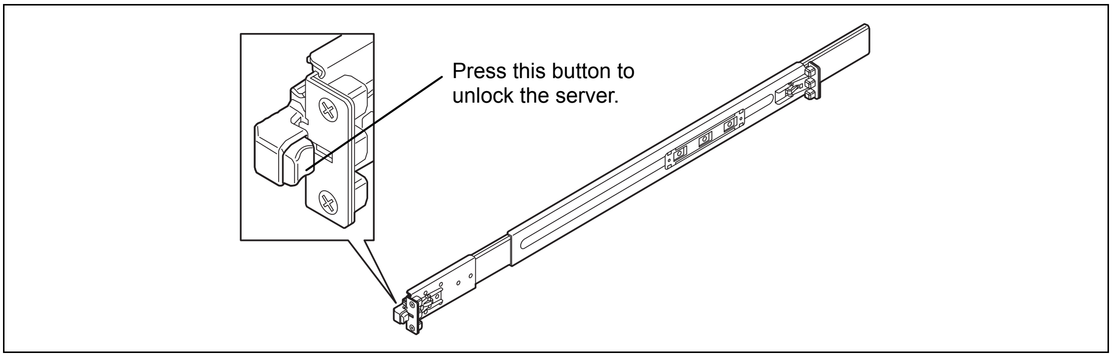


3. <This step is required only when the optional cable arm is mounted.>

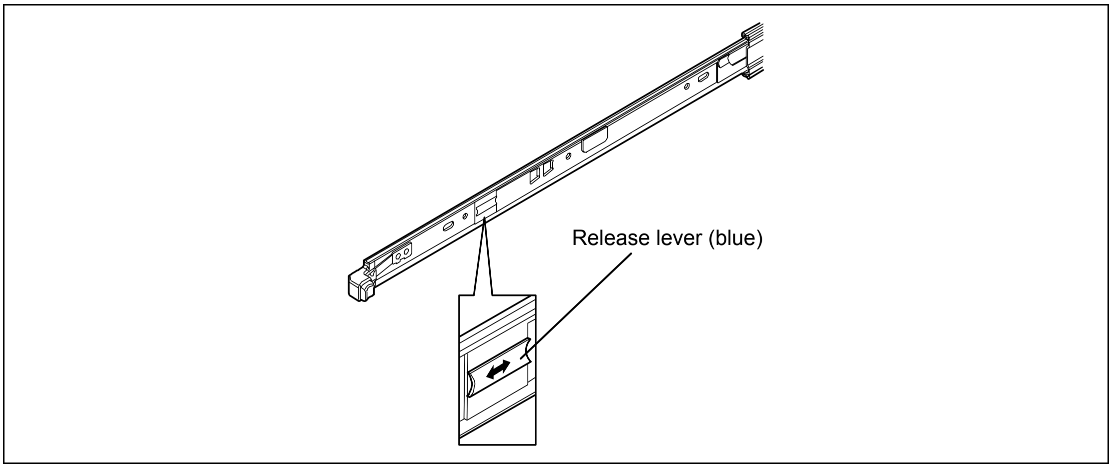
   Remove the cable arm from the server.

4. While pushing the left and the right unlock buttons on the front of the server, pull out the server from the rack slowly and carefully.

The server clicks to be latched.



5. While pushing the right and left release levers (blue) forward or rearward to unlock, slowly pull out the server from the rack.



IMPORTANT: Do not apply any load on the server pulled out from the rack. Doing so may cause personal injury if the server drops.

6. Firmly hold the server, and take it out from the rack.

IMPORTANT:

- Pull out the server slowly holding the bottom of the server by at least two persons.
- Do not apply any load on the server pulled out from the rack. Doing so may cause personal injury if the server drops.
- Be very careful not to get your finger caught in the levers or rails.

Removing Rail Assemblies

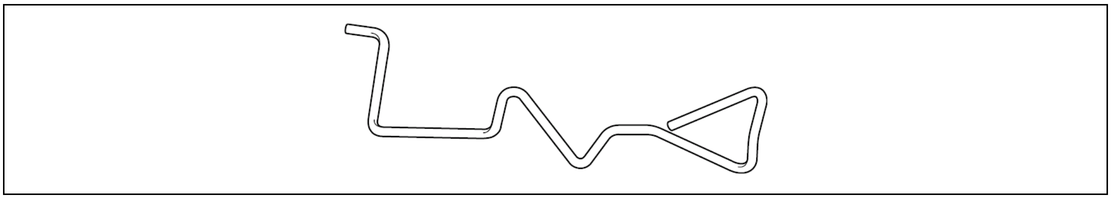
Remove the rail assembly from the 19-inch rack in the following procedure.

CAUTION

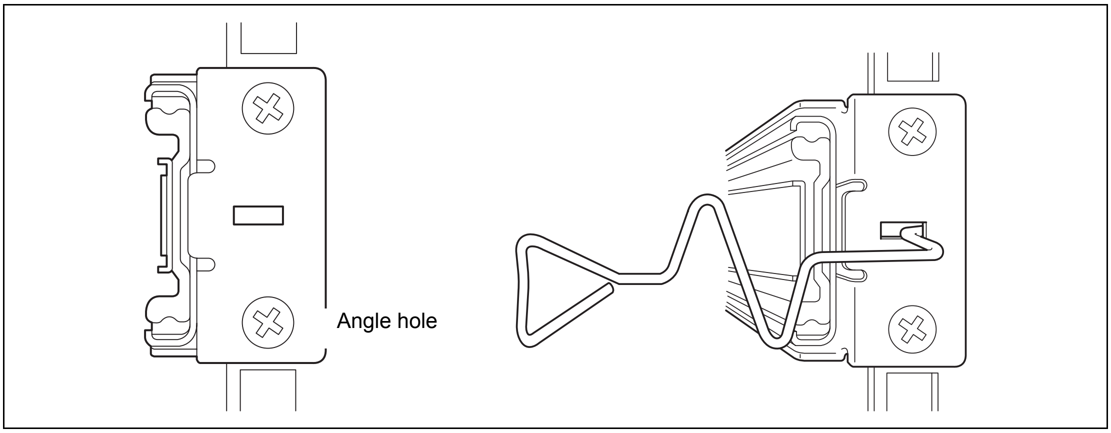
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Do not install/remove the server in/from the rack only by a single person.
- Do not pinch your finger with mechanical components.
- Do not apply any load on the server being pulled out from the rack.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not pull out the server from the rack while it is operating.

1. Remove the server from the rack according to "Removing the Server" described earlier.
2. Prepare the tool to remove the sliding rail (outer rail). The tool is provided with your server.

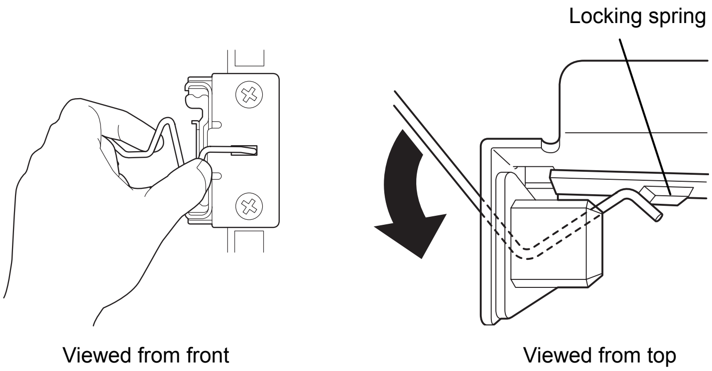


3. Insert the tool into the angle hole at the front of rail assembly, as shown in the figure below.

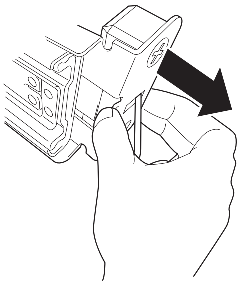


4. Unlock the rail assembly.

Unlock the rail assembly by applying force to the tool in the direction shown by an arrow.

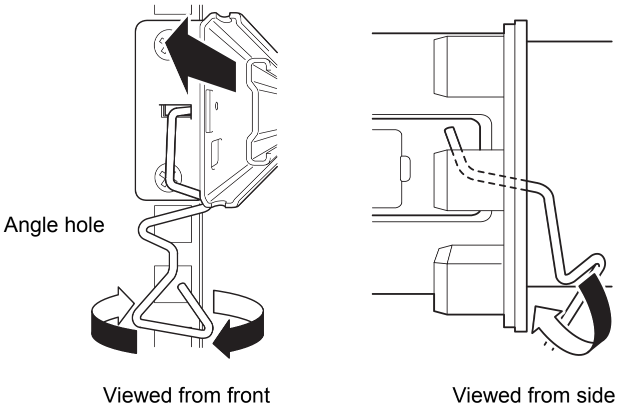

Locking spring
Viewed from front
Viewed from top

5. While the rail assembly is being unlocked, remove it from the rack.



6. Insert the tool into the angle hole at the rear of rail assembly to unlock it.

Rotate the tool as shown in the figure below to unlock the rail assembly.


Angle hole
Viewed from front
Viewed from side

7. While the rail assembly is being unlocked, remove it from the rack.

CONNECTING PERIPHERAL DEVICES

Connect peripheral devices to the server. The server is provided with connectors for wide variety of peripheral devices on its front and rear. The figure on the next page illustrates available peripheral devices for the server in the standard configuration and locations of the connectors for the devices.

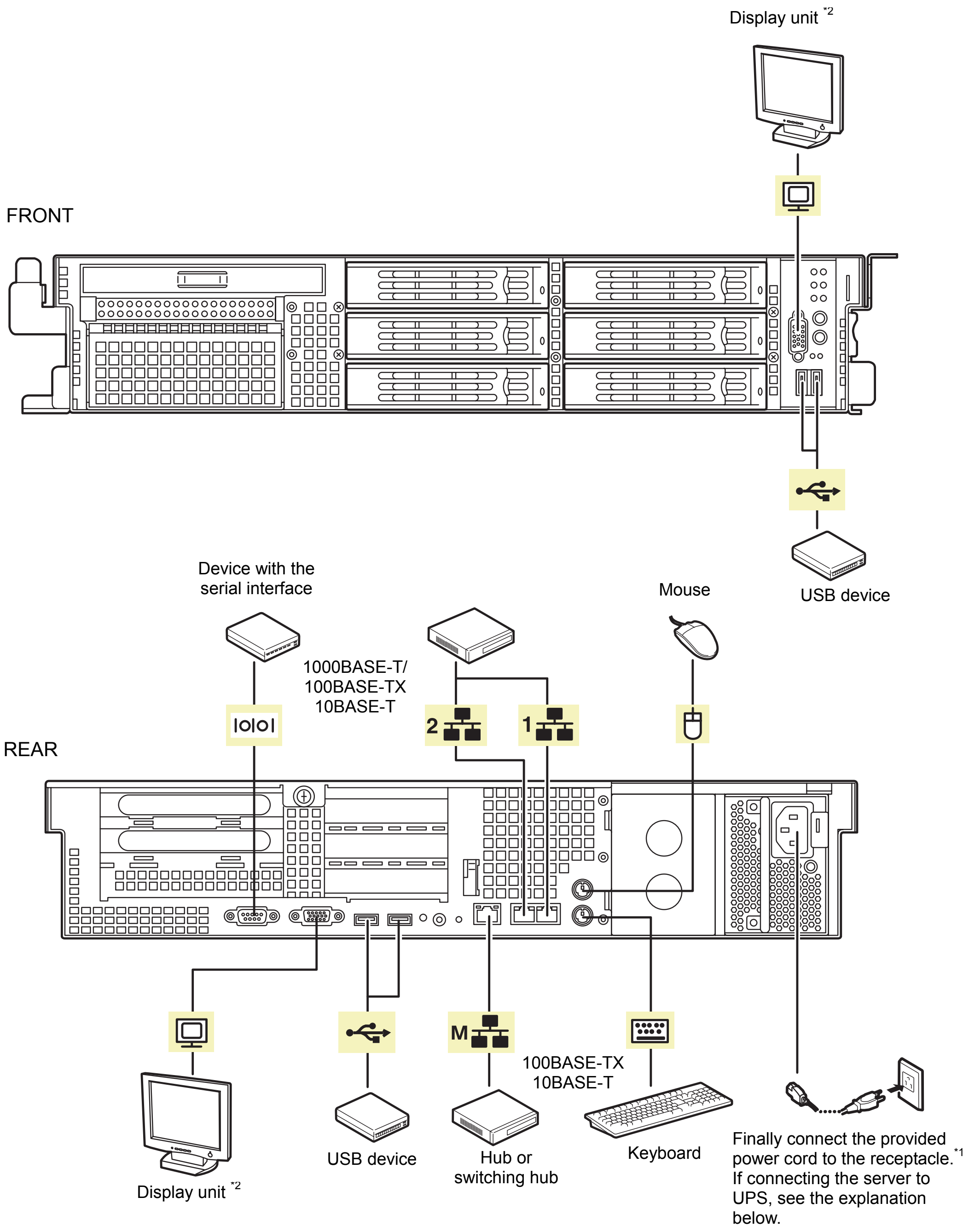
⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Do not connect any interface cable with the power cord of the NEC Express Server plugged to a power source.
- Do not use any unauthorized interface cable.

IMPORTANT:

- Power off the server and a peripheral device before connection. Connecting a powered peripheral device to the powered server will cause malfunctions and failures.
- To connect a third-party peripheral device or interface cable to the server, consult with your service representative for availability of such a device or cable. Some third-party devices may not be used for the server.
- A leased line cannot be connected directly to the serial port connectors.
- Secure the power cord(s) and interface cables with a tie wrap.
- Form the cables in such a way that they will not come into contact with the door or the guide rails on the sides of the server.
- Form the power cord with a slight slack at the AC inlet of the server. This is to prevent the power cord from coming off when the server is pulled out from the rack.
- Do not apply any pressure to the plug of the power cord.


Display unit *2
FRONT
USB device
Device with the
serial interface
Mouse
1000BASE-T/
100BASE-TX
10BASE-T
2
1
REAR
M
100BASE-TX
10BASE-T
Display unit *2
USB device
Hub or
switching hub
Keyboard

Finally connect the provided power cord to the receptacle.[*1] If connecting the server to UPS, see the explanation below.

*1 Connect the power cord to a circuit breaker of 15 A or less.

*2 The display unit can be connected to either of front or rear port.

CONNECTING POWER CORD

Connect the provided power cord to the server.

WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not hold the power plug with a wet hand.
- Do not connect the ground wire to a gas pipe.

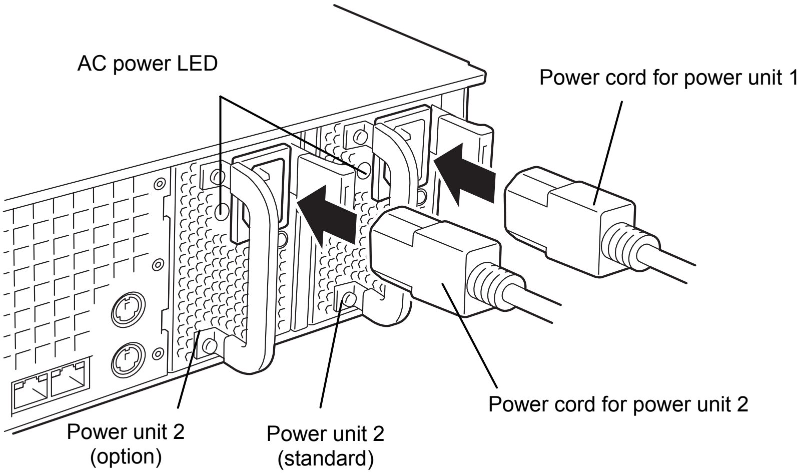
CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Do not plug the power cord in to an improper power source.
- Do not connect the power cord to an outlet that has an illegal number of connections.
- Insert the power plug into the outlet as far as it goes.
- Use the authorized power cord only.

1. Plug the provided power cord into the power receptacle on the rear of the server.
2. Plug the other end of the power cord into the wall outlet.

   The AC power LED on the power supply turns green and flashes.



IMPORTANT: Secure the power cord with an AC cord holder on the rear of the server.

To connect the power cord from the server to an uninterruptive power supply (UPS), use service outlets on the rear of the UPS. Refer to the manual that comes with the UPS.

When the power cord from the server to a UPS, change the BIOS setup of the server to link with power supply from the UPS.

To power on the server from the UPS (Uninterruptible Power Supply), select [Server] - [AC-LINK] - [Power On].

Change a parameter for "AC-LINK" under the Server menu of the BIOS SETUP utility. See Chapter 4 for details.

TURNING ON THE SERVER

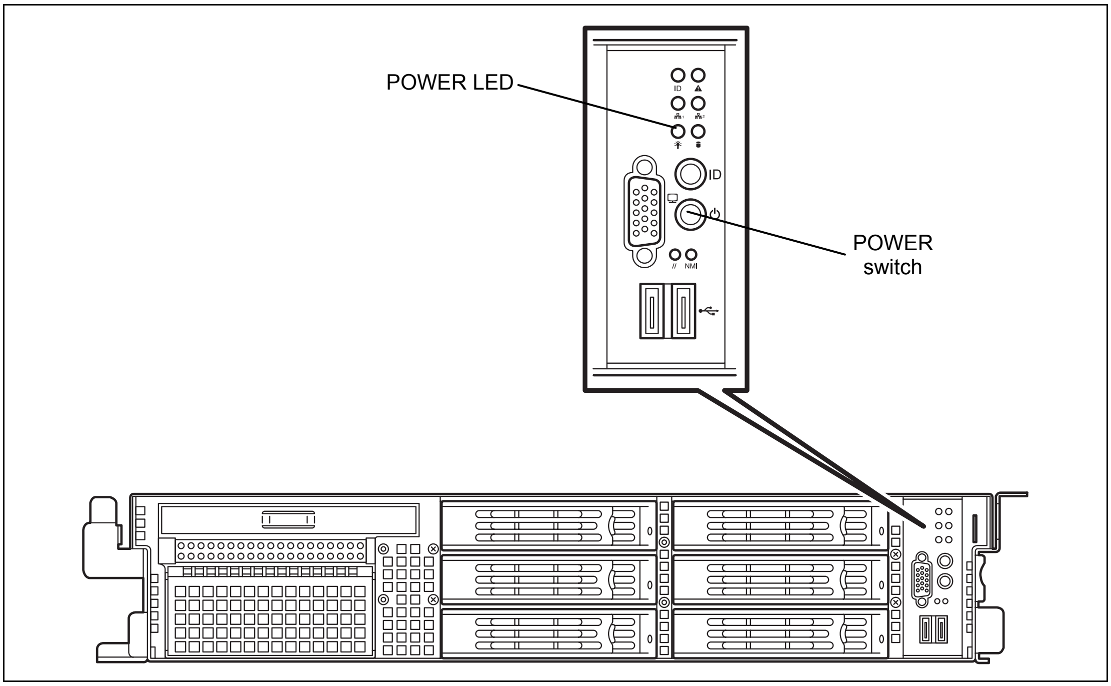
Power on your system as follows.

1. Make sure all external devices, such as a video display, keyboard, and mouse (optional) have been connected, and the power cords are connected.
2. Power on the video display and any other external devices.

NOTE: If the server power cord(s) is connected to a power control unit such as an UPS (Uninterruptible Power Supply), make sure that the power control unit is powered on.

---

3. Open the front bezel.
4. Press the POWER switch.



The POWER LED on the front of the server comes on.

After a few seconds your system begins the internal Power-On Self Test (POST). POST automatically checks the system board, CPU module, memory, keyboard, and most installed peripheral devices.

IMPORTANT:

- Always allow POST to complete before powering down your system.
- The server management logic on your system board monitors and logs system voltage changes. When powering down your system you may experience a 30-second delay from the time you press the push-button power on/off switch on the front panel and your system powering down. This is normal system operation and is required by the server management logic.

If you have problems powering on your system, see Chapter 8.

After you have successfully powered on your system, insert the NEC EXPRESSBUILDER DVD into the optical disk drive, restart the system and follow the screen prompts to run NEC EXPRESSBUILDER.

INSTALLING OPERATING SYSTEM

See Chapter 5 for installing the Microsoft Windows Server network operating system.

To install the other operating system listed above, contact your service representative.

> **IMPORTANT:** Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See the next chapter for detail.

INSTALLING UTILITIES

Install the utilities that come with the server. See Chapter 6 for details.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Connect Flash FDD or USB FDD to the USB connector.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive and reboot the system.
3. Select [Tool menu (Normal mode)].
4. Select [English].
5. Select [Maintenance Utility].
6. Select [System Information Management].
7. Select [Save].

Chapter 4

Configuring Your Server

Configuration and setup utilities are used to change your system configuration. You can configure your system, as well as option boards you may add to your system, using the BIOS SETUP Utility. Several unique system parameters are configured using the BIOS SETUP, which is stored in the system FLASH memory.

The RAID configuration utility configures the RAID System and logical drives connected to the Onboard RAID controller or optional RAID Controller.

If your system has been factory configured, the BIOS SETUP or RAID configuration utility do not need to be run unless you want to change the password or security features, add certain types of option boards or devices, upgrade your system board, or change the RAID configuration.

This chapter also provides information on several system configuration parameters that are set by jumpers on the system board. However, these parameters do not usually require change.

SYSTEM BIOS (SETUP)

This section describes how to specify Basic Input Output System (BIOS) settings.

Make sure you understand the information in this section so you can specify the correct settings when installing the server or adding or removing an optional component.

The SETUP utility is used to change system configuration parameters. This utility is pre-installed in the flash memory of the server and ready to run.

The server is configured with the correct parameters using the SETUP utility and shipped with the best settings. Thus, you don't need to use the SETUP utility in most cases. However, you might wish to use the SETUP utility in the cases described below.

IMPORTANT:

- The SETUP utility is intended for system administrator use only.
- The SETUP utility allows you to set a password. The server is provided with two levels of password: Administrator and User. With the Administrator password, you can view and change all system parameters of the SETUP utility. With the User password, system parameters available for viewing and changing are limited.
- Do not set any password before installing the OS.
- The server contains the latest version of the SETUP utility. Dialog boxes that appear on your SETUP utility might therefore differ from descriptions in this manual. If you find anything unclear, see the online help or ask your service representative.
- Use the Save & Exit menu or the **Esc** or **F4** key when exiting the SETUP utility. Exiting the utility by turning off the power or resetting results in the parameters being lost.

Starting SETUP Utility

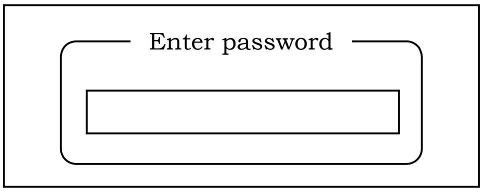
Turning on the server starts POST (Power On Self-Test) and displays its check results. If the NEC logo is displayed, press **Esc**.

After a few seconds, the following message appears at the bottom left of the screen.

```
Press <F2> to enter SETUP or Press <F12> to Network
```

Press **F2** to start the SETUP utility and display its Main menu.

If you have previously set a password with the SETUP utility, the password entry screen appears. Enter the password.



Enter password

Up to three password entries will be accepted. If you fail to enter the password correctly three times in a row, the server halts. (You can no longer proceed.) Turn off the server.

NOTE: The server is provided with two levels of password: Administrator and User. With the Administrator password, you can view and change all system parameters. With the User password, system parameters available for viewing and changing are limited.

Description on On-Screen Items and Key Usage

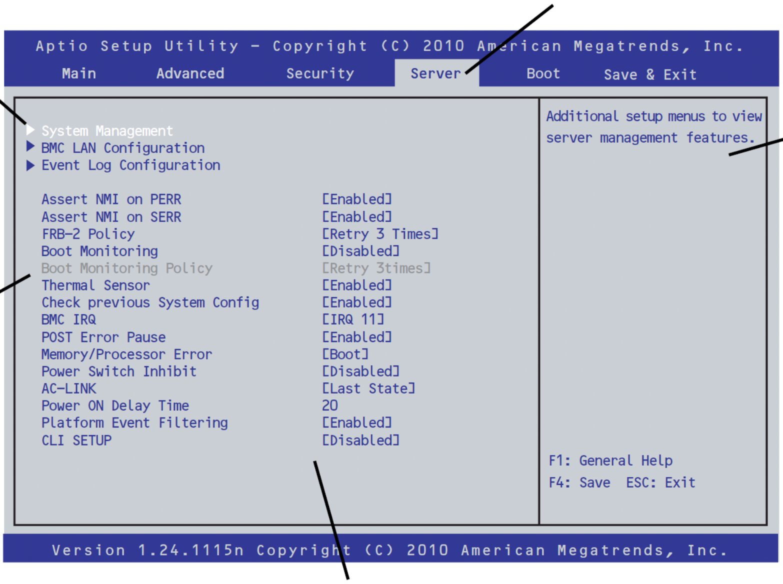
Use the following keyboard keys to work with the SETUP utility.

Indicates the current menu.

Indicates there are submenus.

Help window

Setup item menu(s)*



```
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.

▶ System Management
▶ BMC LAN Configuration
▶ Event Log Configuration

  Assert NMI on PERR                  [Enabled]
  Assert NMI on SERR                  [Enabled]
  FRB-2 Policy                        [Retry 3 Times]
  Boot Monitoring                     [Disabled]
  Boot Monitoring Policy              [Retry 3times]
  Thermal Sensor                      [Enabled]
  Check previous System Config        [Enabled]
  BMC IRQ                             [IRQ 11]
  POST Error Pause                    [Enabled]
  Memory/Processor Error              [Boot]
  Power Switch Inhibit                [Disabled]
  AC-LINK                             [Last State]
  Power ON Delay Time                 20
  Platform Event Filtering            [Enabled]
  CLI SETUP                           [Disabled]

Additional setup menus to view
server management features.

F1: General Help
F4: Save  ESC: Exit

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```

Parameter (high-lights upon selection) menu

* Items displayed in gray are automatically specified or detected, cannot be changed, or can only be changed by entering a password.

Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Security, Server, Boot, or Save & Exit menu.
– and **+**:	Changes the value (parameter) of the selected item. When a submenu option (an option preceded by "✱") is selected, these keys are disabled.
Enter	Press **Enter** to select (determine) parameters.
Esc	Return to the previous screen.

Menu and Parameter Descriptions

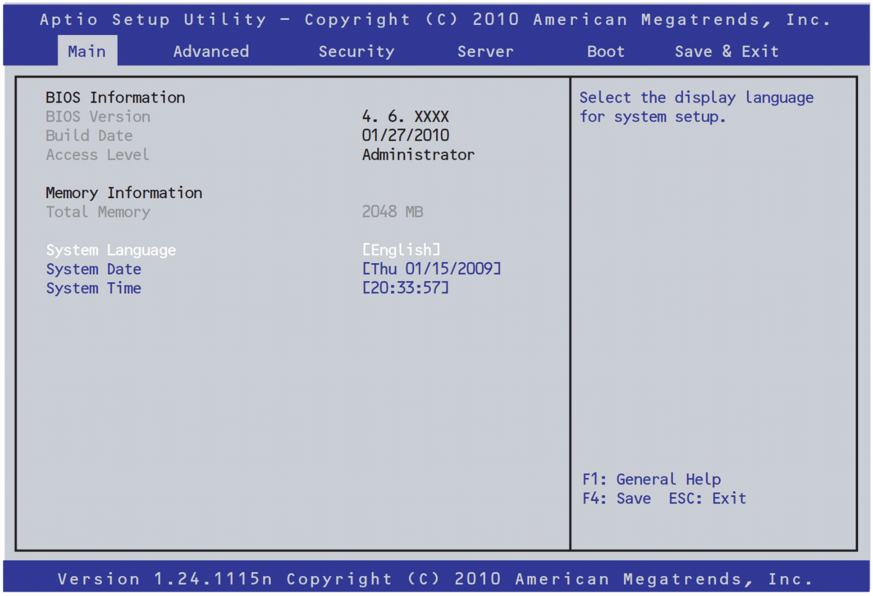
The SETUP utility has the following six major menus:

- Main
- Advanced
- Security
- Server
- Boot
- Save & Exit

To specify detailed feature settings, select a submenu from the above menus. The following describes available functions and parameters, as well as the factory settings, for each menu.

Main

When you start up the setup utility, the Main menu is displayed first.



```
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.

BIOS Information
BIOS Version                4. 6. XXXX
Build Date                  01/27/2010
Access Level                Administrator

Memory Information
Total Memory                2048 MB

System Language             [English]
System Date                 [Thu 01/15/2009]
System Time                 [20:33:57]

Select the display language
for system setup.

F1: General Help
F4: Save  ESC: Exit

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```

The following table shows the items that can be specified on the Main menu screen and their functions.

Option	Parameters	Description
BIOS Information	–	–
BIOS Version	–	Displays the BIOS version (display only).
Build Date	MM/DD/YYYY	Displays the BIOS build date (display only).
Access Level	[Administrator] or [User]	Displays whether the setup menu is currently being accessed by an administrator or user (display only). If no password is specified, [Administrator] is displayed.
Memory Information	–	–
Total Memory	–	Displays the basic memory capacity (display only).
System Language	[English] Français Deutsch Español Italiano	Select which language BIOS displays. If you run SETUP with [BIOS Redirection Port] being enabled, [English] is selected for [System Language] forcedly. At that time, you cannot change setting of [System Language]. If [BIOS Redirection Port] is disabled, the default setting is restored at the next startup of SETUP, and you can select the language.
System Date	WWW MM/DD/YYYY	Set the system date.
System Time	HH:MM:SS	Set the system time.

[ ]: Factory-set

IMPORTANT:

Be sure to confirm that the date and time in the BIOS parameters are correctly specified. In any of the following situations, check the system time before using the server:

- After transporting the server
- After removing the server from storage
- After setting the server to "Hibernate" under any conditions for which server operation is not guaranteed (any temperature outside the range from 10 to 35°C or any humidity outside the range from 20 to 80%)

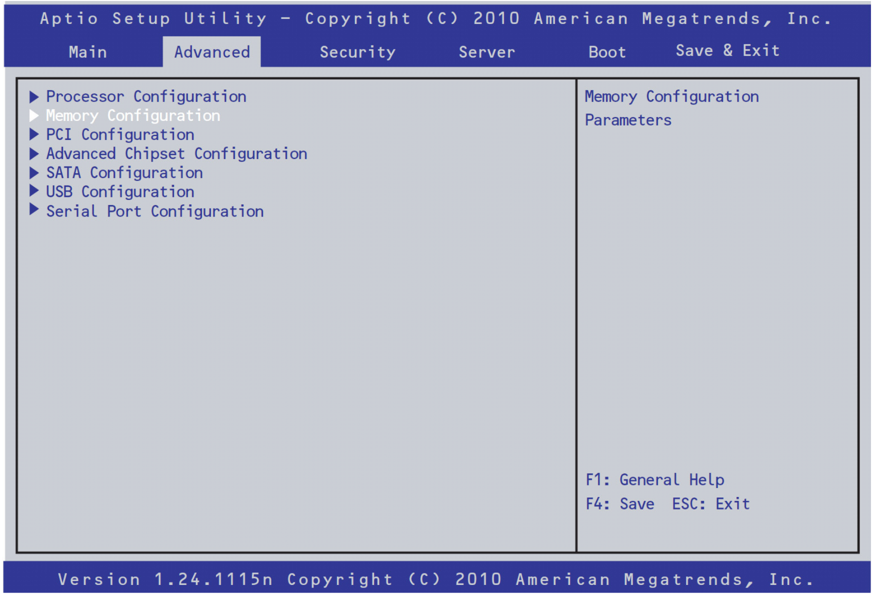
Check the system time approximately once per month. In addition, if incorporating the server into a system for which high time precision is required, it is recommended to ensure the precision by using a time server (an NTP server) or similar means.

If the system time becomes considerably slow or fast over time even though you regularly adjust it, contact the dealer where you purchased the server or the maintenance service company for maintenance.

Advanced

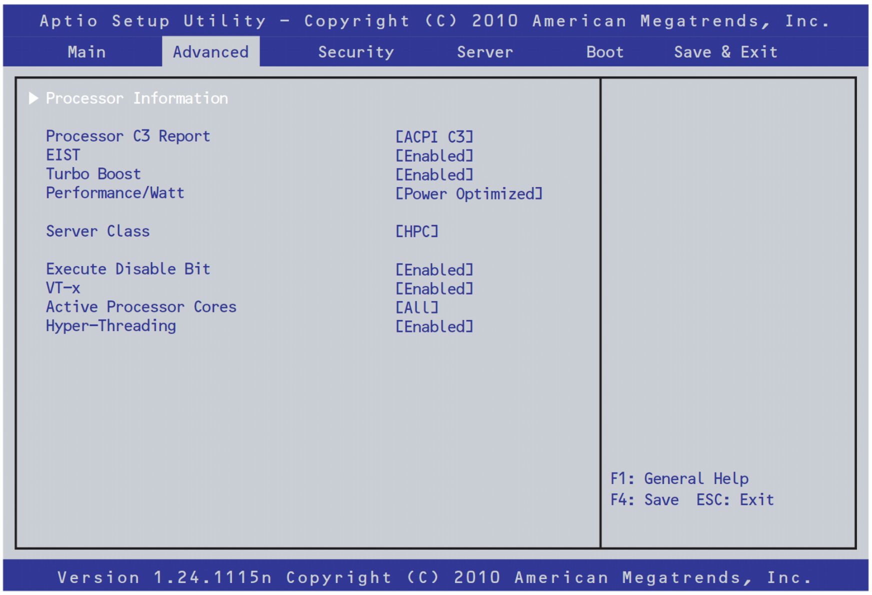
When the cursor is moved to the [Advanced] position, the Advanced menu is displayed.

If an item with an arrow displayed to its left (all menus in this section) is selected and then the **Enter** key is pressed, a submenu is displayed in which settings are specified.


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main
Advanced
Security
Server
Boot
Save & Exit
▶ Processor Configuration
▶ Memory Configuration
▶ PCI Configuration
▶ Advanced Chipset Configuration
▶ SATA Configuration
▶ USB Configuration
▶ Serial Port Configuration
Memory Configuration Parameters
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

Processor Configuration submenu

When [Processor Configuration] is selected in the Advanced menu and then the **Enter** key is pressed, the screen below is displayed. If an item with an arrow displayed to its left is selected and then the **Enter** key is pressed, a submenu is displayed.



```
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
   Main   Advanced     Security     Server     Boot     Save & Exit

▶ Processor Information

  Processor C3 Report                    [ACPI C3]
  EIST                                   [Enabled]
  Turbo Boost                            [Enabled]
  Performance/Watt                       [Power Optimized]

  Server Class                           [HPC]

  Execute Disable Bit                    [Enabled]
  VT-x                                   [Enabled]
  Active Processor Cores                 [All]
  Hyper-Threading                        [Enabled]

                                                          F1: General Help
                                                          F4: Save  ESC: Exit

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```

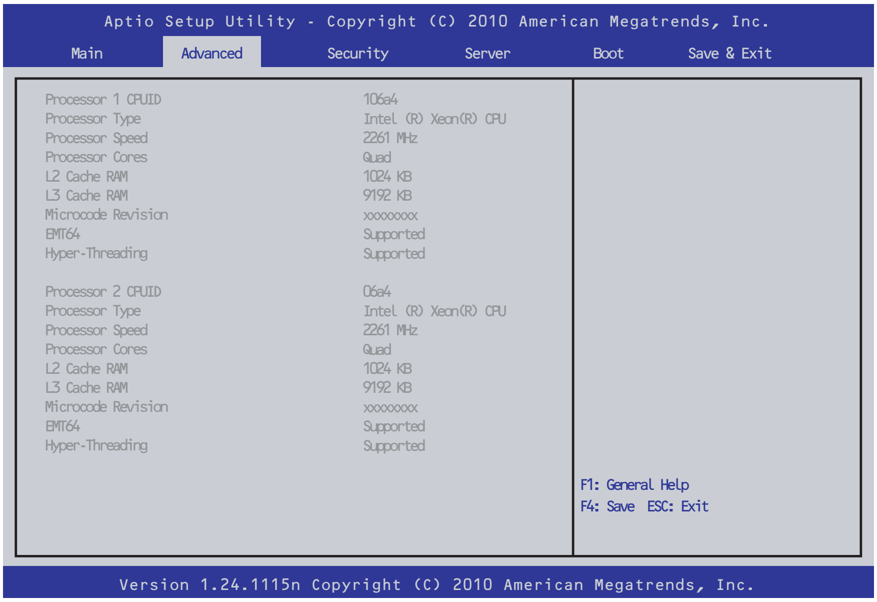
For details about the options, see the following table.

Option	Parameters	Description
Processor Information	–	–
Processor C3 Report	Disabled ACPI C2 [ACPI C3]	Specify the processor C3 state.
EIST	Disabled [Enabled]	Specify whether to enable or disable the SpeedStep feature provided by Intel processors. This setting is only displayed and can only be specified if a processor that supports the feature is installed.
Turbo Boost	Disabled [Enabled]	Specify whether to enable or disable the Turbo Boost Technology feature provided by Intel processors.
Performance/Watt	Traditional [Power Optimized]	Specify the optimization setting for the Turbo Boost feature.
Server Class	Enterprise [HPC] Custom	Select the performance level of processor. Enterprise: Specify when using the server with less power consumption. HPC: Specify when using the server with high performance. Custom: Specify when providing setting individually.

Option	Parameters	Description
Hardware Prefetcher	Disabled [Enabled]	Specify whether to enable or disable the Hardware Prefetcher of the processor. This menu appears and becomes accessible when [Custom] is specified for [Server Class].
Adjacent Cache Line Prefetch	Disabled [Enabled]	Specify whether to enable or disable the optimal access to the cache line from the memory. This menu appears and becomes accessible when [Custom] is specified for [Server Class].
L1 Data Prefetcher	Disabled [Enabled]	Specify whether to enable or disable the prefetcher of the L1 data. This menu appears and becomes accessible when [Custom] is specified for [Server Class].
Data Reuse Optimization	Disabled [Enabled]	Specify whether to enable or disable the optimal reuse of data. This menu appears and becomes accessible when [Custom] is selected for [Server Class].
Execute Disable Bit	Disabled [Enabled]	This is only displayed for a processor that supports the Execute Disable Bit feature. Specify whether to use this feature.
VT-x	Disabled [Enabled]	Specify whether to enable or disable the virtualization technology features provided by Intel processors.
Active Processor Cores	[All] 1 2 3 4 5	Specify how many active cores are in the processor. The number of optional cores differs depending on the installed processor.
Hyper-Threading	Disabled [Enabled]	This feature is used to show one physical CPU as two logical CPUs. This setting is only displayed and can only be specified if a processor that supports the feature is installed.

[ ]: Factory-set

Processor Information submenu



```
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.

Processor 1 CPUID            106a4
Processor Type               Intel (R) Xeon(R) CPU
Processor Speed              2261 MHz
Processor Cores              Quad
L2 Cache RAM                 1024 KB
L3 Cache RAM                 9192 KB
Microcode Revision           xxxxxxxx
EMT64                        Supported
Hyper-Threading              Supported

Processor 2 CPUID            06a4
Processor Type               Intel (R) Xeon(R) CPU
Processor Speed              2261 MHz
Processor Cores              Quad
L2 Cache RAM                 1024 KB
L3 Cache RAM                 9192 KB
Microcode Revision           xxxxxxxx
EMT64                        Supported
Hyper-Threading              Supported

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```

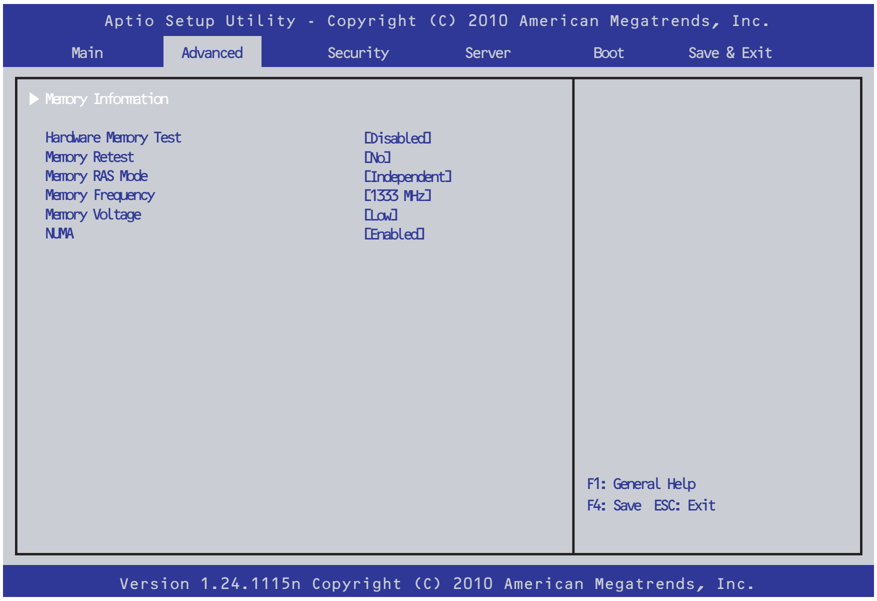
For details about the options, see the following table (display only).

Option	Parameters	Description
Processor 1 CPUID	A number Not Installed	If a number is displayed, it is the processor 1 ID. [Not Installed] indicates that processor 1 is not installed.
Processor Type	–	Displays the processor 1 type.
Processor Speed	–	Displays the processor 1 clock speed.
Processor Cores	–	Displays the number of internal processor 1 cores.
L2 Cache RAM	–	Displays the secondary cache size for processor 1.
L3 Cache RAM	–	Displays the tertiary cache size for processor 1.
Microcode Revision	–	Displays the revision of the microcode applied to processor 1.
EMT64	Supported	Displays whether processor 1 supports the Intel 64 architecture.
Hyper-Threading	Supported	Displays whether processor 1 supports Hyper-Threading features.
Processor 2 CPUID	A number Not Installed	If a number is displayed, it is the processor 2 ID. [Not Installed] indicates that processor 2 is not installed.
Processor Type	–	Displays the processor 2 type.
Processor Speed	–	Displays the processor 2 clock speed.
Processor Cores	–	Displays the number of internal processor 2 cores.
L2 Cache RAM	–	Displays the secondary cache size for processor 2.
L3 Cache RAM	–	Displays the tertiary cache size for processor 2.
Microcode Revision	–	Displays the revision of the microcode applied to processor 2.
EMT64	Supported	Displays whether processor 2 supports the Intel 64 architecture.
Hyper-Threading	Supported	Displays whether processor 2 supports Hyper-Threading features.

[ ]: Factory-set

Memory Configuration submenu

When [Memory Configuration] is selected in the Advanced menu and then the **Enter** key is pressed, the screen below is displayed. If an item with an arrow displayed to its left is selected and then the **Enter** key is pressed, a submenu is displayed.



```
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.

▶ Memory Information

Hardware Memory Test          [Disabled]
Memory Retest                 [No]
Memory RAS Mode               [Independent]
Memory Frequency              [1333 MHz]
Memory Voltage                [Low]
NUMA                          [Enabled]

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```
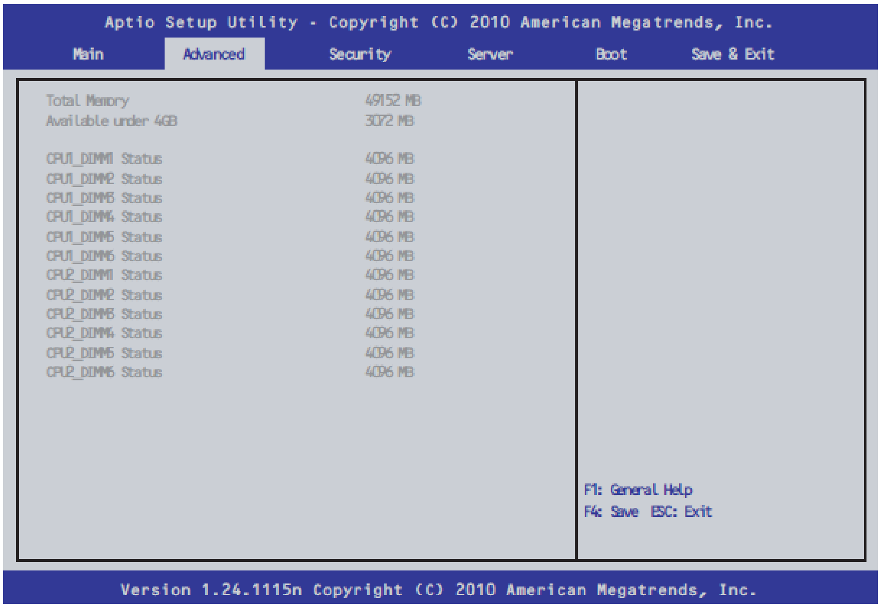

For details about the options, see the following table.

Option	Parameters	Description
Memory Information	–	–
Hardware Memory Test	[Disabled] Enabled	Specify whether to perform a memory test. Specifying Enable increases the POST startup time.
Memory Retest	[No] Yes	Specify whether to clear the memory error information and test all DIMMs on the next startup. After the next startup, this option is automatically switched to [No].
Memory RAS Mode	[Independent] Mirroring Lock Step Sparing	Specify the memory RAS mode. For details about this feature. See Chapter 9 for details.
Memory Frequency	Auto 800MHz 1066MHz 1333MHz	Specify the memory clock frequency.
Memory Voltage	Normal [Low]	Specify the voltage at which the memory operates. Selecting Normal increases power consumption, but the memory operation clock speeds up.
NUMA	Disabled [Enabled]	Specify whether to enable or disable the Non-Uniform Memory Access feature (displayed only in 2-CPU configuration).

[ ]: Factory-set

Memory Information submenu



```
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Total Memory                 49152 MB
Available under 4GB          3072 MB

CPU1_DIMM1 Status            4096 MB
CPU1_DIMM2 Status            4096 MB
CPU1_DIMM3 Status            4096 MB
CPU1_DIMM4 Status            4096 MB
CPU1_DIMM5 Status            4096 MB
CPU1_DIMM6 Status            4096 MB
CPU2_DIMM1 Status            4096 MB
CPU2_DIMM2 Status            4096 MB
CPU2_DIMM3 Status            4096 MB
CPU2_DIMM4 Status            4096 MB
CPU2_DIMM5 Status            4096 MB
CPU2_DIMM6 Status            4096 MB

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```

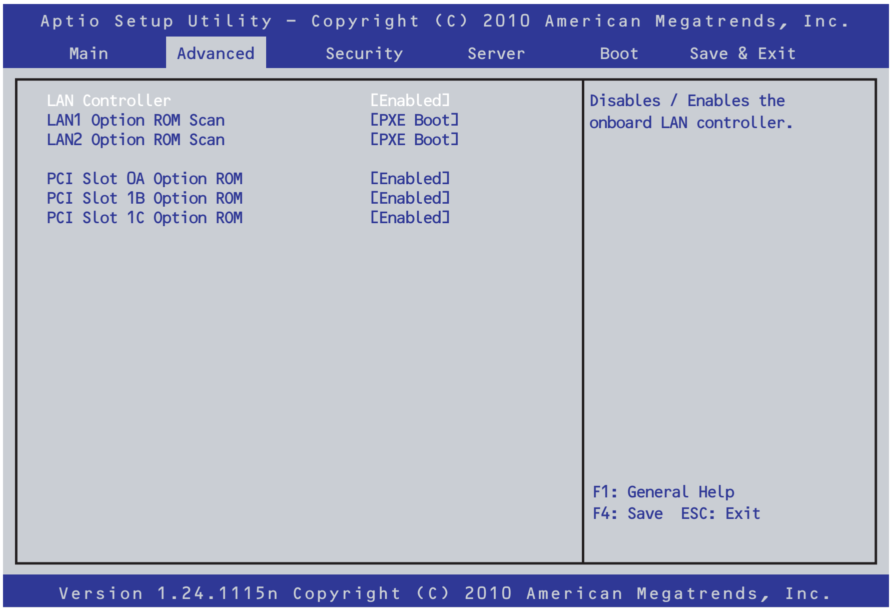
For details about the options, see the following table (display only).

Option	Parameters	Description
Total Memory	–	Displays the basic memory capacity.
Available under 4GB	–	Displays the amount of available memory in an area at 4GB or less.
CPU1_DIMM1-6 Status CPU2_DIMM1-6 Status	A number Disabled Not Installed Error	Displays the current memory status. A number is displayed if the memory is normal and indicates the capacity. [Disabled] indicates that the memory has failed, [Not Installed] indicates that no memory is installed, and [Error] indicates forced memory startup. The displayed names and DIMM socket names are the same.

[ ]: Factory-set

PCI Configuration submenu

When [PCI Configuration] is selected in the Advanced menu and then the **Enter** key is pressed, the screen below is displayed.



```
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LAN Controller                     [Enabled]        Disables / Enables the
LAN1 Option ROM Scan               [PXE Boot]       onboard LAN controller.
LAN2 Option ROM Scan               [PXE Boot]

PCI Slot 0A Option ROM             [Enabled]
PCI Slot 1B Option ROM             [Enabled]
PCI Slot 1C Option ROM             [Enabled]

                                                    F1: General Help
                                                    F4: Save  ESC: Exit

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```

For details about the options, see the following table.

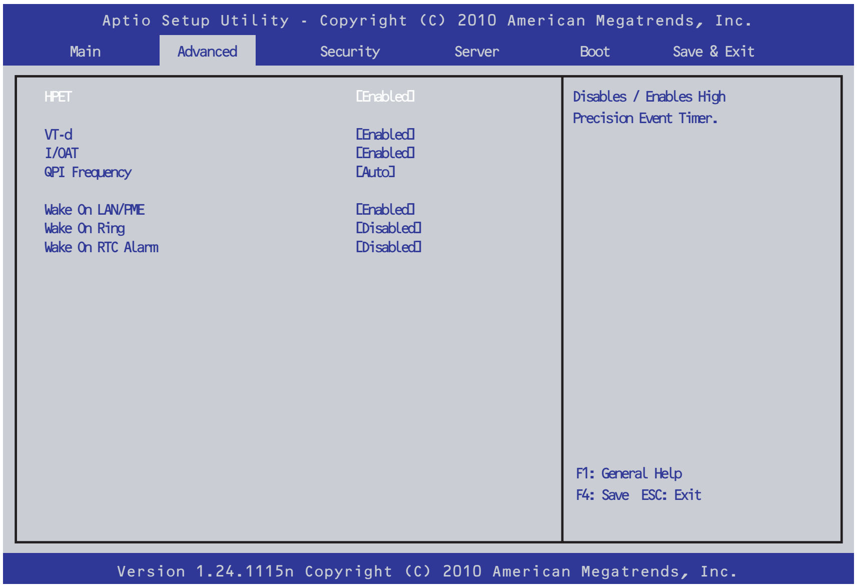
Option	Parameters	Description
LAN Controller	Disabled [Enabled]	Specify whether to enable or disable the onboard LAN Controller.
LAN1 Option ROM Scan	Disabled [PXE Boot] iSCSI Boot	Specify the boot method for LAN1, which is onboard.
LAN2 Option ROM Scan	Disabled [PXE Boot] iSCSI Boot	Specify the boot method for LAN2, which is onboard.
PCI Slot 0A Option ROM	Disabled [Enabled]	Specify whether to enable or disable an option ROM for a RAID controller installed in a slot dedicated to RAID controllers.
PCI Slot 2B/3B Option ROM	Disabled [Enabled]	Specify whether to enable or disable an option ROM for a PCI card connected to the full-height riser card.
PCI Slot 1C-3C Option ROM	Disabled [Enabled]	Specify whether to enable or disable an option ROM for a PCI card connected to the low-profile riser card.

[ ]: Factory-set

IMPORTANT: For a RAID controller, LAN card (network boot), or Fibre Channel controller, if no hard disk drive on which an OS is installed is connected, set the option ROM for that slot to [Disabled].

Advanced Chipset Configuration submenu

When [Advanced Chipset Configuration] is selected in the Advanced menu and then the **Enter** key is pressed, the screen below is displayed.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main
Advanced
Security
Server
Boot
Save & Exit
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

```
HPET                     [Enabled]
 
VT-d                     [Enabled]
I/OAT                    [Enabled]
QPI Frequency            [Auto]

Wake On LAN/PME          [Enabled]
Wake On Ring             [Disabled]
Wake On RTC Alarm        [Disabled]
```

Disables / Enables High Precision Event Timer.

For details about the options, see the following table.

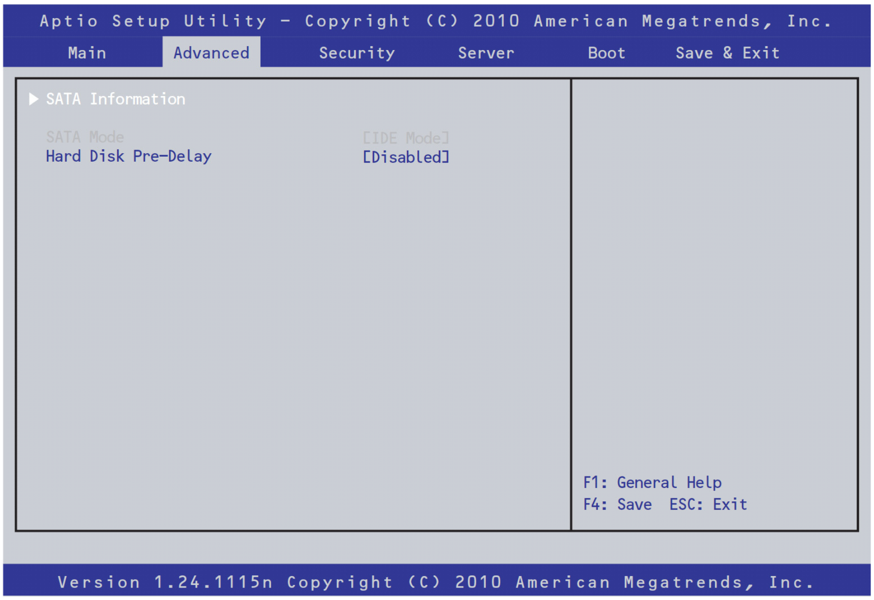
Option	Parameters	Description
HPET	Disabled [Enabled]	Specify whether to enable or disable the multimedia timer.
VT-d	Disabled [Enabled]	Specify whether to enable or disable Intel® Virtualization Technology for Directed I/O, which is provided by the Intel chipset. This setting is only displayed for a processor that supports this feature.
I/OAT	Disabled [Enabled]	Specify whether to enable or disable the Intel I/O acceleration technology feature.
QPI Frequency	[Auto] 4,800 GT/s 5,866 GT/s 6,400 GT/s	Specify the QPI bus speed.
Wake On LAN/PME	Disabled [Enabled]	Specify whether to enable or disable the feature for remotely turning the power on through a network.
Wake On Ring	[Disabled] Enabled	Specify whether to enable or disable the feature for remotely turning the power on through a serial port (modem).
Wake On RTC Alarm	[Disabled] Enabled	Specify whether to enable or disable the feature for remotely turning the power on by using the real-time clock alarm feature.

[ ]: Factory-set

IMPORTANT: If the AC power is turned off while the Wake On Ring feature is enabled, this feature is disabled at the next system boot after AC power-on. Press the power switch to start up the system. If the AC power is turned off, the Wake On Ring feature on the power management chip is disabled until the next DC power-on.

SATA Configuration submenu

When [SATA Configuration] is selected in the Advanced menu and then the **Enter** key is pressed, the screen below is displayed. If an item with an arrow displayed to its left is selected and then the **Enter** key is pressed, a submenu is displayed.



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▶ SATA Information

SATA Mode [IDE Mode]
Hard Disk Pre-Delay [Disabled]

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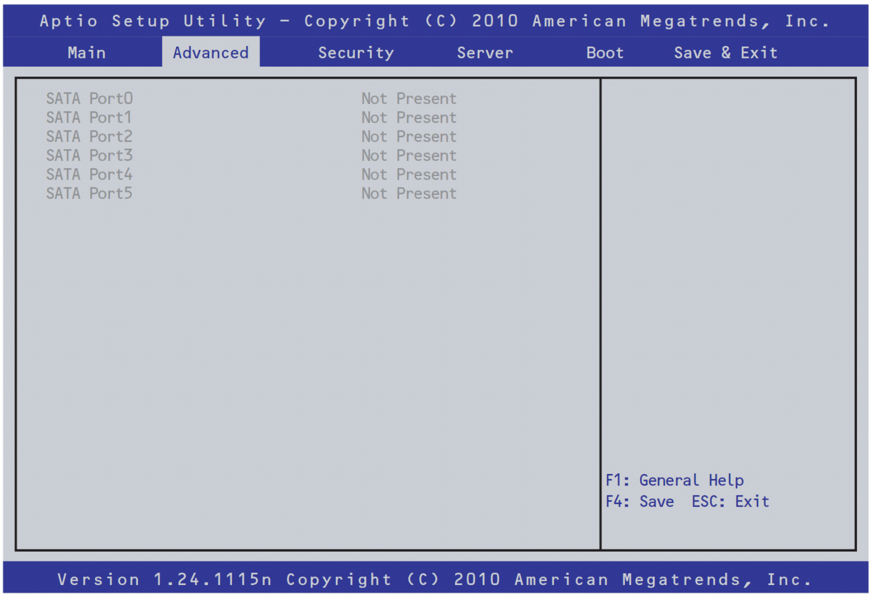
For details about the options, see the following table.

Option	Parameters	Description
SATA Information	–	This is not displayed when SATA Mode is set to [RAID Mode].
SATA Mode	[IDE Mode] RAID Mode	Displays the SATA Mode status (display only).
Hard Disk Pre-Delay	[Disable] 3 Seconds 6 Seconds 9 Seconds 12 Seconds 15 Seconds 21 Seconds 30 Seconds	The system waits the specified time before first accessing HDD devices during the POST processing.

[ ]: Factory-set

SATA Information submenu



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Main
Advanced
Security
Server
Boot
Save & Exit
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

```
SATA Port0                          Not Present
SATA Port1                          Not Present
SATA Port2                          Not Present
SATA Port3                          Not Present
SATA Port4                          Not Present
SATA Port5                          Not Present
```

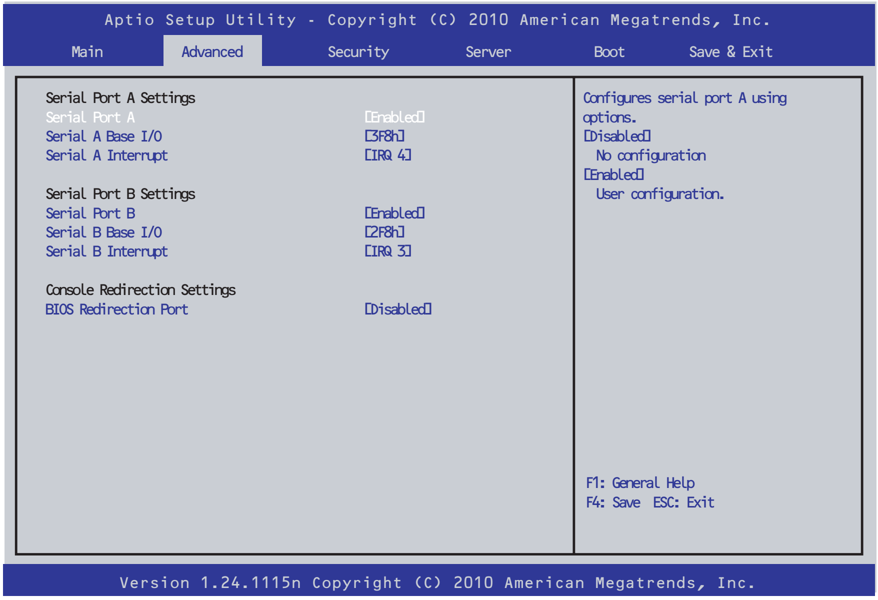
For details about the options, see the following table (display only).

Option	Parameters	Description
SATA Port0 SATA Port1 SATA Port2 SATA Port3 SATA Port4 SATA Port5	–	Displays the devices connected to each channel.

[ ]: Factory-set

USB Configuration submenu

When [USB Configuration] is selected in the Advanced menu and then the **Enter** key is pressed, the screen below is displayed.



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Main
Advanced
Security
Server
Boot
Save & Exit
F1: General Help
F4: Save ESC: Exit
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```
Serial Port A Settings
Serial Port A                        [Enabled]
Serial A Base I/O                    [3F8h]
Serial A Interrupt                   [IRQ 4]

Serial Port B Settings
Serial Port B                        [Enabled]
Serial B Base I/O                    [2F8h]
Serial B Interrupt                   [IRQ 3]

Console Redirection Settings
BIOS Redirection Port                [Disabled]
```

```
Configures serial port A using
options.
[Disabled]
  No configuration
[Enabled]
  User configuration.
```

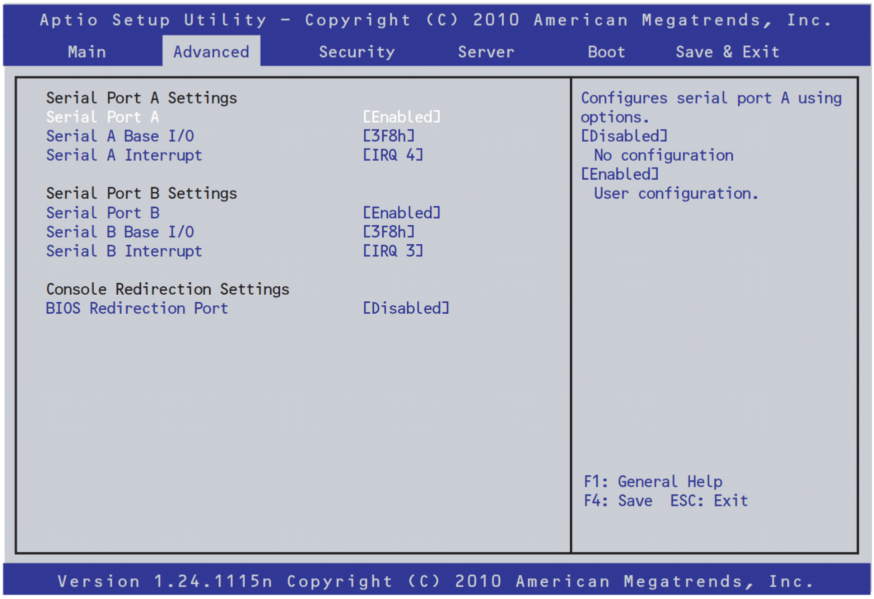
For details about the options, see the following table.

Option	Parameters	Description
USB 2.0 Support	Disabled [Enabled]	Specify whether to enable or disable USB 2.0.
Device Reset Timeout	10 sec [20 sec] 30 sec 40 sec	Specify the time to wait when issuing a Start Unit command to a USB mass storage device until a timeout occurs.

[ ]: Factory-set

Serial Port Configuration submenu

When [Serial Port Configuration] is selected in the Advanced menu and then the **Enter** key is pressed, the screen below is displayed.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Main
Advanced
Security
Server
Boot
Save & Exit
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

```
Serial Port A Settings
Serial Port A                       [Enabled]
Serial A Base I/O                   [3F8h]
Serial A Interrupt                  [IRQ 4]

Serial Port B Settings
Serial Port B                       [Enabled]
Serial B Base I/O                   [3F8h]
Serial B Interrupt                  [IRQ 3]

Console Redirection Settings
BIOS Redirection Port               [Disabled]
```

```
Configures serial port A using
options.
[Disabled]
 No configuration
[Enabled]
 User configuration.
```

For details about the options, see the following table.

Option	Parameters	Description
Serial Port A Settings	–	–
Serial Port A	Disabled [Enabled]	Specify whether to enable or disable serial port A.
Serial A Base I/O	[3F8h] 2F8h 3E8h 2E8h	Specify the base I/O address for serial port A.
Serial A Interrupt	[IRQ 4] IRQ 3	Specify the interrupt for serial port A.
Serial Port B Settings	–	–
Serial Port B	Disabled [Enabled]	Specify whether to enable or disable serial port B.
Serial B Base I/O	3F8h [2F8h] 3E8h 2E8h	Specify the base I/O address for serial port B.
Serial B Interrupt	IRQ 4 [IRQ 3]	Specify the interrupt for serial port B.
Console Redirection Settings	–	–

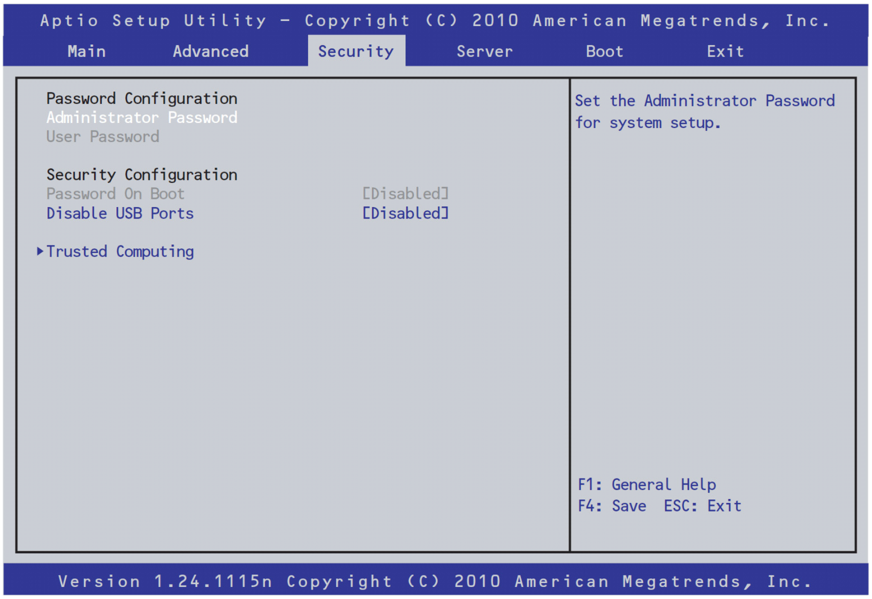
Option	Parameters	Description
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Specify whether to enable or disable direct connections from the management terminal using the ESMPRO Manager or hyper terminal from the serial port specified for this menu item. If this menu item is enabled, the following setting menu items are displayed.
Terminal Type	[VT100+] VT-UTF8 ANSI	Select the terminal type.
Baud Rate	9600 19200 57600 [115200]	Specify the baud rate used for the interface with the connected hardware console.
Data Bits	7 [8]	Specify the data bit width.
Parity	[None] Even Odd	Specify the parity bits.
Stop Bits	[1] 2	Specify the stop bit setting.
Flow Control	None [Hardware RTS/CTS] Hardware RTS/CTS+CD	Specify the flow control method.
Continue C.R. after POST	Disabled [Enabled]	Specify whether to enable or disable the continued execution of console redirection after the POST finishes.

[ ]: Factory-set

Security

When the cursor is moved to the [Security] position, the Security menu is displayed.

If an item with an arrow displayed to its left is selected and then the **Enter** key is pressed, a submenu is displayed in which settings are specified.



```
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
   Main       Advanced      Security      Server      Boot      Exit

 Password Configuration                             Set the Administrator Password
 Administrator Password                             for system setup.
 User Password

 Security Configuration
 Password On Boot                    [Disabled]
 Disable USB Ports                   [Disabled]

▸Trusted Computing

                                                    F1: General Help
                                                    F4: Save  ESC: Exit

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```

When the **Enter** key is pressed while Administrator Password or User Password is selected, the screen for registering or changing the password is displayed.

Specify your password here.

IMPORTANT:

- A user password can be set only if an administrator password is already set.
- Set the passwords only after the OS is installed.
- If you forget your password, contact your service representative.

For details about the options, see the following table.

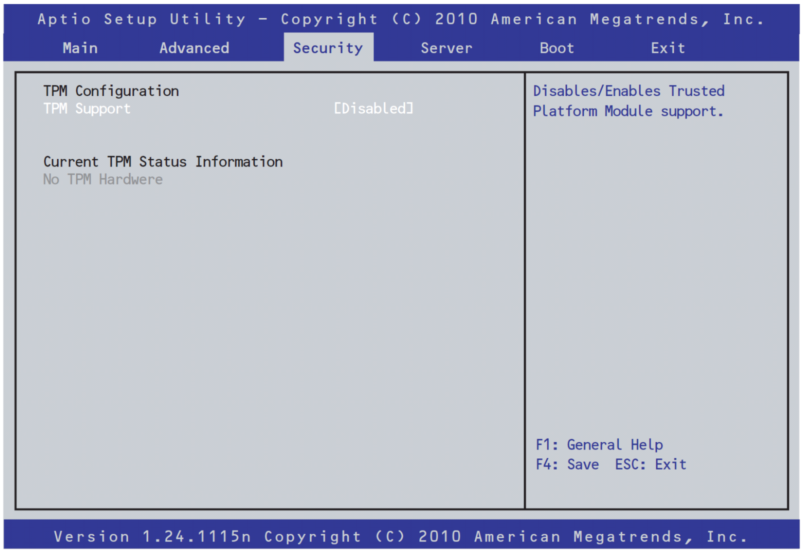
Security settings can be specified in the submenu that opens by selecting [Security Configuration] and pressing **Enter**.

Option	Parameter	Description
Password Configuration	–	–
Administrator Password	Up to 20 alphanumeric characters	When the **Enter** key is pressed, the administrator password entry screen is displayed. This password can be used to access all setup menus. This setting can only be specified by logging in as an administrator when starting up the setup utility.
User Password	Up to 20 alphanumeric characters	When the **Enter** key is pressed, the user password entry screen is displayed. This password can only be used to access certain setup menus. This setting can only be specified by logging in as an administrator when starting up the setup utility.
Security Configuration	–	–
Password On Boot	[Disabled] Enabled	Specify whether to enable or disable password entry on boot. An administrator password must be specified in advance. If an administrator password is specified and this option is set to [Disabled], BIOS is judged to have been started up by a normal user.
Disable USB Ports	[Disabled] Front Rear Internal Front + Rear Front + Internal Rear + Internal Front + Rear + Internal	Specify whether to enable or disable the USB ports.
Trusted Computing		

[ ]: Factory-set

Trusted Computing submenu

When [Trusted Computing] is selected in the Security menu and then the **Enter** key is pressed, the screen below is displayed.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Main
Advanced
Security
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Boot
Exit
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

```
TPM Configuration
TPM Support                          [Disabled]

Current TPM Status Information
No TPM Hardwere
```

Disables/Enables Trusted Platform Module support.

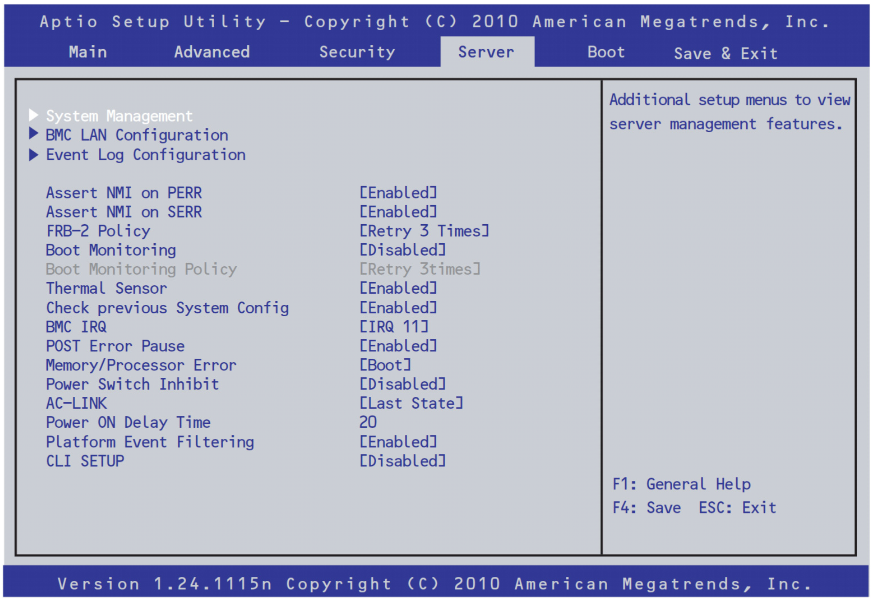
For details about the options, see the following table.

Option	Parameter	Description
TPM Configuration	–	–
TPM Support	[Disabled] Enabled	Specify whether to enable or disable TPM feature support. This option is selectable only if an administrator password is set. If this menu is enabled, the TPM setting menus below are displayed.
TPM State	[Disabled] Enabled	Specify whether to enable or disable the TPM feature. This option can only be selected when [TPM Support] is set to [Enabled].
Pending TPM Operation	[None] Enable Take Ownership Disable Take Ownership TPM Clear	Specify the TPM operation. This option can only be selected when [TPM State] is set to [Enabled].
Current TPM Status Information	–	–
TPM Enabled Status	Enabled Disabled	These items display the status of the TPM feature (display only).
TPM Active Status	Activated Deactivated	
TPM Owner Status	Owned UnOwned	

[ ]: Factory-set

Server

When the cursor is moved to the [Server] position, the Server menu is displayed. If an item with an arrow displayed to its left (all menus in this section) is selected and then the **Enter** key is pressed, a submenu is displayed in which settings are specified.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Main
Advanced
Security
Server
Boot
Save & Exit
F1: General Help
F4: Save ESC: Exit
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```
▶ System Management
▶ BMC LAN Configuration
▶ Event Log Configuration

  Assert NMI on PERR              [Enabled]
  Assert NMI on SERR              [Enabled]
  FRB-2 Policy                    [Retry 3 Times]
  Boot Monitoring                 [Disabled]
  Boot Monitoring Policy          [Retry 3times]
  Thermal Sensor                  [Enabled]
  Check previous System Config    [Enabled]
  BMC IRQ                         [IRQ 11]
  POST Error Pause                [Enabled]
  Memory/Processor Error          [Boot]
  Power Switch Inhibit            [Disabled]
  AC-LINK                         [Last State]
  Power ON Delay Time             20
  Platform Event Filtering        [Enabled]
  CLI SETUP                       [Disabled]
```

Additional setup menus to view server management features.

This section describes the options that can be specified on the Server menu and their functions. If [System Management], [BMC LAN Configuration], or [Event Log Configuration] is selected and then the **Enter** key is pressed, a submenu is displayed in which settings are specified.

For details about the options, see the following table.

Option	Parameters	Description
System Management	–	–
BMC LAN Configuration	–	–
Event Log Configuration	–	–
Assert NMI on PERR	Disabled [Enabled]	Specify whether to support PCI PERR.
Assert NMI on SERR	Disabled [Enabled]	Specify whether to support PCI SERR.
FRB-2 Policy	[Retry 3 Times] Disable FRB2 Timer Always Reset	Specify the system operation when an FRB level 2 error occurs.
Boot Monitoring	[Disabled] 5 to 60 minutes	Specify whether to enable or disable the boot monitoring function on booting, or select the timeout time limit. To use this function, install NEC ESMPRO Agent. Set this item to [Disabled] if the system is booted from an OS without NEC ESMPRO Agent installed.

Option	Parameters	Description
Boot Monitoring Policy	[Retry 3 Times] Always Reset	Specify the processing when a timeout occurs during boot monitoring. This option can only be specified if [Boot Monitoring] is specified. If [Retry 3 times] is selected, the system is reset after the occurrence of a timeout and booting up the OS is retried up to three times. If [Always Reset] is selected, the system is reset after the occurrence of a timeout and booting up the OS is retried repeatedly.
Thermal Sensor	Disabled [Enabled]	Specify whether to enable or disable the thermal sensor monitoring function. If a thermal error is detected with this item set to [Enabled], the system stops at the end of POST.
Check previous System Config	Disabled [Enabled]	If the system configuration has been changed since the previous startup, the system waits for user intervention before booting the system.
BMC IRQ	[IRQ 11] Disabled	Determines routing of the BMC interrupt.
Post Error Pause	Disabled [Enabled]	Specify whether to stop the POST once at the end of POST if an error occurs during the POST.
Memory Error	Halt [Boot]	Specify whether to stop operation once at the end of POST processing if there is a memory resource error while executing POST processing. This setting is effective if [POST Error Pause], which is on the [Server] menu, is set to [Enabled]. Even if this option is set to [Boot], operation stops at the end of POST processing if errors occurred for all resources.
Power Switch Inhibit	[Disabled] Enabled	Specify whether to enable or disable the power switch. Note that it is not possible to disable the ability to forcibly turn off the power by holding down the switch for four seconds.
AC-LINK	Stay Off [Last State] Power On	Specify the state of power when the AC power to the server is turn off once and then on.
Power ON Delay Time	[20] - 255	Specify the power on delay time within the range between 20 and 255 seconds. The time specified is valid when "Power On" or "Last State" is specified for AC LINK.
Platform Event Filtering	Disabled [Enabled]	Specify whether to enable or disable the platform event filtering (PEF) feature.
CLI SETUP	[Disabled] Enabled	Set to [Enabled] to run the CLI SETUP (Command Line Interface SETUP Menu) instead of SETUP menu of this GUI. To use the SETUP menu of this GUI, set this item to [Disabled] on CLI SETUP menu.

[ ]: Factory-set

The table below shows the operation when the AC power to the server is turned off once and then back on, in accordance with the [AC LINK] setting.

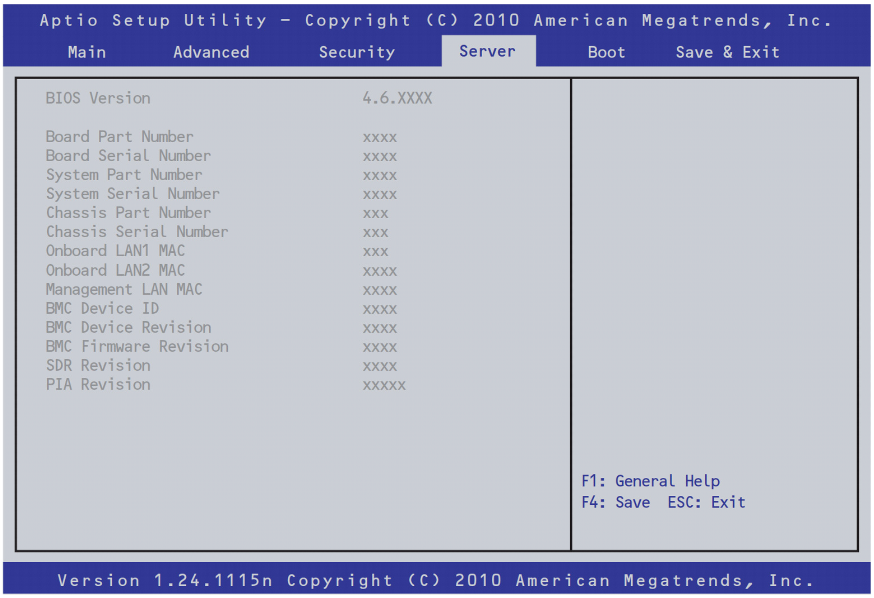
System status before AC power off	**Setting of AC LINK**		
	Stay Off	**Last State**	**Power On**
Operating	Off	On	On
Aborting (DC power being off also)	Off	Off	On
Forced shutdown	Off	Off	On

* Press the power switch continuously for four seconds or longer. This forcibly turns off the power.

IMPORTANT: To turn on the server from the UPS (Uninterruptible Power Supply), select [Server] - [AC LINK] - [Power On].

System Management submenu

When [System Management] is selected in the Server menu and then the **Enter** key is pressed, the screen below is displayed.


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main
Advanced
Security
Server
Boot
Save & Exit
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

```
BIOS Version                     4.6.XXXX

Board Part Number                xxxx
Board Serial Number              xxxx
System Part Number               xxxx
System Serial Number             xxxx
Chassis Part Number              xxx
Chassis Serial Number            xxx
Onboard LAN1 MAC                 xxx
Onboard LAN2 MAC                 xxxx
Management LAN MAC               xxxx
BMC Device ID                    xxxx
BMC Device Revision              xxxx
BMC Firmware Revision            xxxx
SDR Revision                     xxxx
PIA Revision                     xxxxx
```

For details about the options, see the following table (display only).

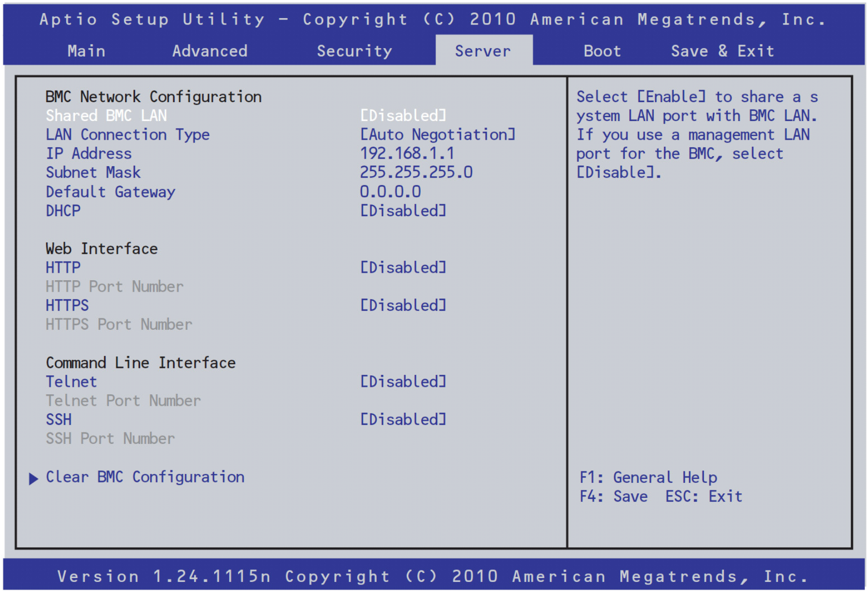
Option	Parameters	Description
BIOS Version	–	Displays the current BIOS version.
Board Part Number	–	Displays the part number of the motherboard.
Board Serial Number	–	Displays the serial number of the motherboard.
System Part Number	–	Displays the part number of the system.
System Serial Number	–	Displays the serial number of the system.
Chassis Part Number	–	Displays the part number of the chassis.
Chassis Serial Number	–	Displays the serial number of the chassis.
Onboard LAN1 MAC Address	–	Displays the MAC address of the onboard LAN port 1.
Onboard LAN2 MAC Address	–	Displays the MAC address of the onboard LAN port 2.)
Management LAN MAC Address	–	Displays the MAC address of the management LAN port.
BMC Device ID	–	Displays the BMC device ID.
BMC Device Revision	–	Displays the BMC device revision.
BMC Firmware Revision	–	Displays the BMC firmware revision.
SDR Revision	–	Displays the revision of the sensor data record.
PIA Revision	–	Displays the revision of the platform information area.

[ ]: Factory-set

BMC LAN Configuration submenu

When [BMC LAN Configuration] is selected in the Server menu and then the **Enter** key is pressed, the screen below is displayed.

IMPORTANT: The management-dedicated LAN connector cannot be used for a different LAN.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Main
Advanced
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Server
Boot
Save & Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

```
BMC Network Configuration
Shared BMC LAN                      [Disabled]
LAN Connection Type                 [Auto Negotiation]
IP Address                          192.168.1.1
Subnet Mask                         255.255.255.0
Default Gateway                     0.0.0.0
DHCP                                [Disabled]

Web Interface
HTTP                                [Disabled]
HTTP Port Number
HTTPS                               [Disabled]
HTTPS Port Number

Command Line Interface
Telnet                              [Disabled]
Telnet Port Number
SSH                                 [Disabled]
SSH Port Number

▶ Clear BMC Configuration
```

```
Select [Enable] to share a s
ystem LAN port with BMC LAN.
If you use a management LAN
port for the BMC, select
[Disable].

F1: General Help
F4: Save  ESC: Exit
```

For details about the options, see the following table.

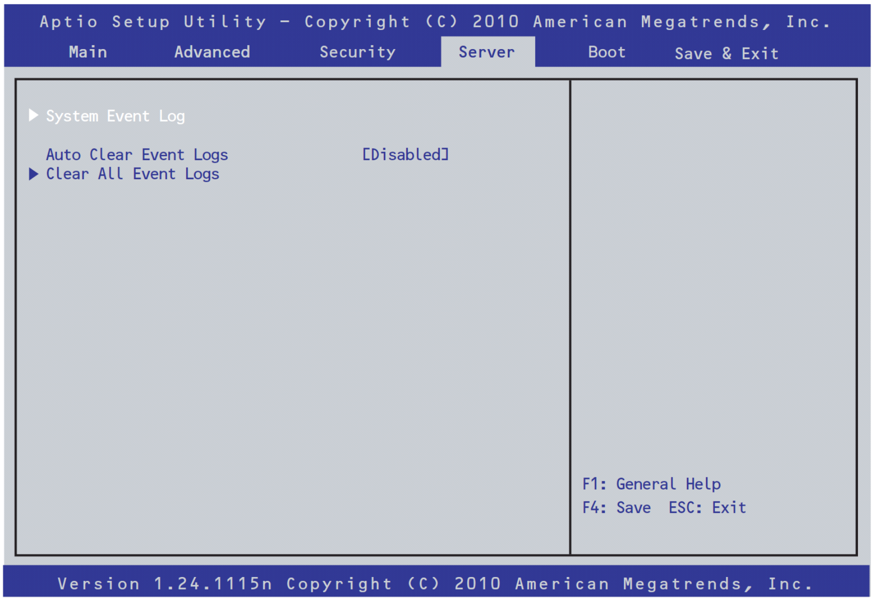
Option	Parameters	Description
BMC Network Configuration	–	–
Shared BMC LAN	Disabled Enabled	Set this option to [Disabled] if the management LAN port is used. If this option is set to [Enabled], it is not possible to use LAN1 as both a normal and management LAN, so the management LAN port becomes unavailable.
LAN Connection Type	[Auto Negotiation] 100Mbps Full Duplex 100Mbps Half Duplex 10Mbps Full Duplex 10Mbps Half Duplex	Specify the connection type for management LAN port.
IP Address	[192.168.1.1]	Specify an IP address for the management LAN.
Subnet Mask	[255.255.255.0]	Specify a subnet mask for the management LAN.
Default Gateway	[0.0.0.0]	Specify a default gateway for the management LAN.

Option	Parameters	Description
DHCP	Disabled Enabled	Set to [Enabled] to obtain an IP address from the DHCP server automatically. If you intend to specify an IP address manually, set to [Disabled].
Web Interface	–	–
HTTP	Disabled Enabled	Set to [Enabled] to use HTTP communication for the Web interface.
HTTP Port Number	[80]	Specify the TCP port number which the management LAN uses for HTTP communication.
HTTPS	Disabled Enabled	Set to [Enabled] to use HTTPS communication for the Web interface.
HTTPS Port Number	[443]	Specify the TCP port number that the management LAN uses for HTTPS communication.
Command Line Interface	–	–
Telnet	Disabled Enabled	Set to [Enabled] to use Telnet communication as a command line interface.
Telnet Port Number	[23]	Specify the TCP port number to be used for Telnet communication.
SSH	Disabled Enabled	Set to [Enabled] to use SSH communication as a command line interface.
SSH Port Number	[22]	Specify the TCP port number to be used for SSH communication.
Clear BMC Configuration	[No] Yes	Press **Enter** and select "Yes" to initialize the BMC configuration.

[ ]: Factory-set

Event Log Configuration submenu

When [Event Log Configuration] is selected in the Server menu and then the **Enter** key is pressed, the screen below is displayed. If an item with an arrow displayed to its left is selected and then the **Enter** key is pressed, a submenu is displayed.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main
Advanced
Security
Server
Boot
Save & Exit

▶ System Event Log

Auto Clear Event Logs [Disabled]

▶ Clear All Event Logs

F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

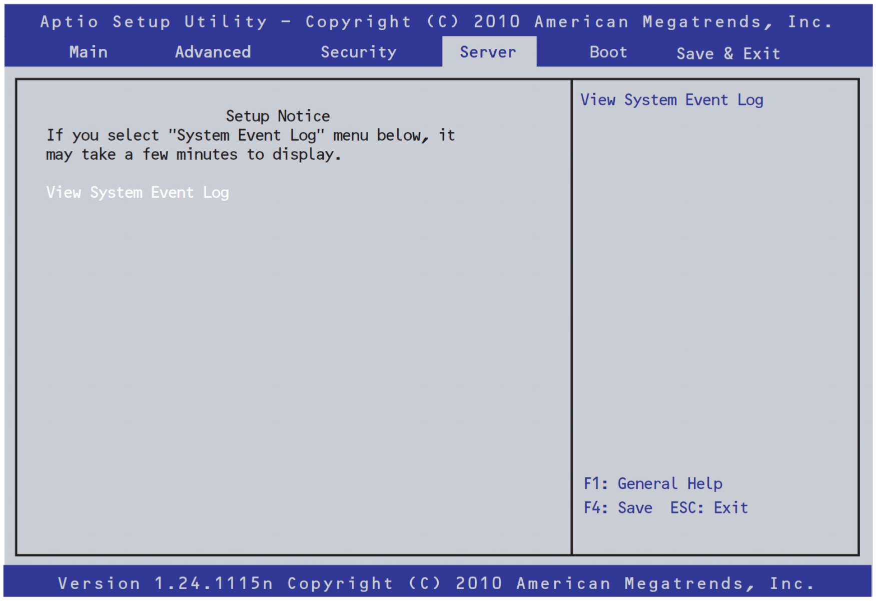
For details about the options, see the following table.

Option	Parameters	Description
System Event Log	–	System Event Log submenu is displayed.
Auto Clear Event Logs	Enabled [Disabled]	If set to "Enabled", logs are automatically cleared when the error log area becomes full.
Clear All Event Logs	[No] Yes	Press **Enter** and select "Yes" to clear the system event logs.

[ ]: Factory-set

System Event Log submenu

When [System Event Log] is selected for [Event Log Configuration] on the Server menu, the screen below is displayed.

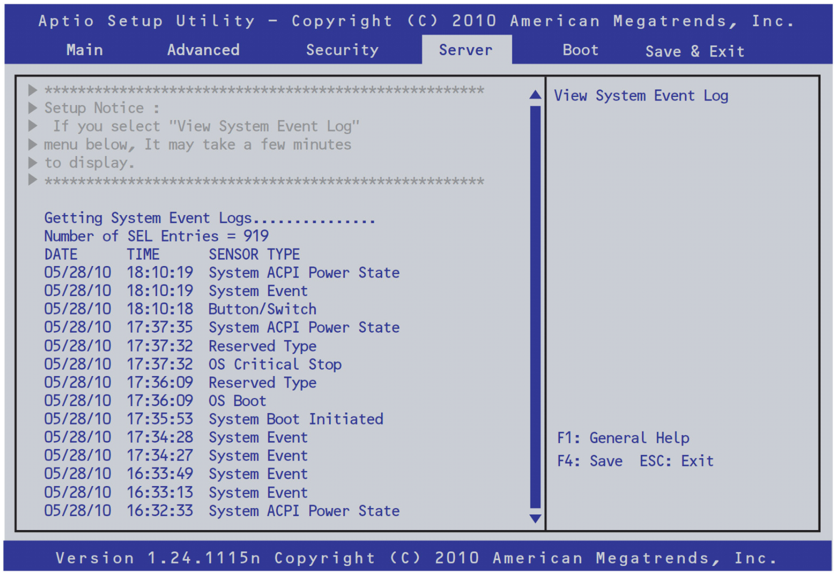

Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main
Advanced
Security
Server
Boot
Save & Exit
View System Event Log
View System Event Log
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

Setup Notice
If you select "System Event Log" menu below, it
may take a few minutes to display.

In addition, when [View System Event Log] is selected, the screen below is displayed.

The following shows the system event log settings as an example.

The recorded system event log entries can be displayed by pressing, the up, down, **+**, **-**, **Home**, and **End** keys.


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main
Advanced
Security
Server
Boot
Save & Exit
View System Event Log
F1: General Help
F4: Save ESC: Exit
Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.

```
▶ ******************************************************
▶ Setup Notice :
▶  If you select "View System Event Log"
▶ menu below, It may take a few minutes
▶ to display.
▶ ******************************************************

  Getting System Event Logs...............
  Number of SEL Entries = 919
  DATE      TIME      SENSOR TYPE
  05/28/10  18:10:19  System ACPI Power State
  05/28/10  18:10:19  System Event
  05/28/10  18:10:18  Button/Switch
  05/28/10  17:37:35  System ACPI Power State
  05/28/10  17:37:32  Reserved Type
  05/28/10  17:37:32  OS Critical Stop
  05/28/10  17:36:09  Reserved Type
  05/28/10  17:36:09  OS Boot
  05/28/10  17:35:53  System Boot Initiated
  05/28/10  17:34:28  System Event
  05/28/10  17:34:27  System Event
  05/28/10  16:33:49  System Event
  05/28/10  16:33:13  System Event
  05/28/10  16:32:33  System ACPI Power State
```

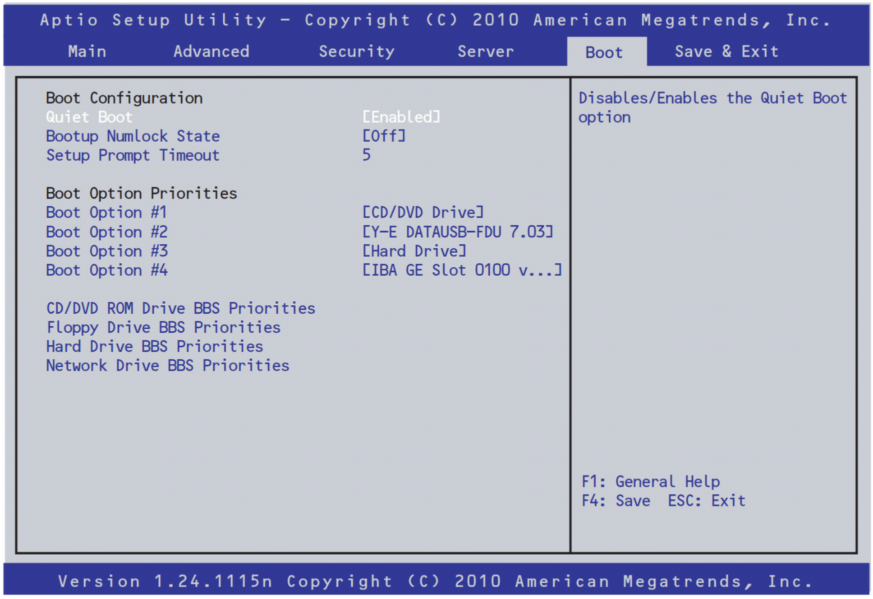
IMPORTANT: Notes on performing Clear BMC Configuration

- Executing "Load Setup Defaults" in BIOS SETUP utility does not restore the default values for settings related to the management LAN of BMC. To restore the default values, you need to execute Clear BMC Configuration.
- It might take a few moments until initialization completes after execution of Clear BMC Configuration.
- If you are using NEC ESMPRO Agent Extension, settings for remote management feature made in NEC ESMPRO Agent Extension is also cleared by executing Clear BMC Configuration. Before execution, be sure to make backup copy of setting information for remote management feature by using NEC ESMPRO Agent Extension or "System Management" in Tool menu of NEC EXPRESSBUILDER.

NOTE: Executing [Save Custom Defaults/Load Custom Defaults] of BIOS SETUP does not save the settings you have specified in the BMC LAN Configuration menu.

Boot

When the cursor is moved to the [Boot] position, the Boot menu is displayed.



```
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.

Boot Configuration                                  Disables/Enables the Quiet Boot
Quiet Boot                  [Enabled]               option
Bootup Numlock State        [Off]
Setup Prompt Timeout        5

Boot Option Priorities
Boot Option #1              [CD/DVD Drive]
Boot Option #2              [Y-E DATAUSB-FDU 7.03]
Boot Option #3              [Hard Drive]
Boot Option #4              [IBA GE Slot 0100 v...]

CD/DVD ROM Drive BBS Priorities
Floppy Drive BBS Priorities
Hard Drive BBS Priorities
Network Drive BBS Priorities
                                                    F1: General Help
                                                    F4: Save  ESC: Exit

Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.
```

For details about the options, see the following table.

Option	Parameters	Description
Boot Configuration	–	–
Quiet Boot	Disabled [Enabled]	When this option is set to [Disabled], the results of POST execution are displayed instead of the NEC logo after the power is turned on. If [BIOS Redirection Port] is enabled, this option is shown as [Unavailable] and inaccessible. The Quiet Boot feature always disabled. If [BIOS Redirection Port] is disabled, the default setting is displayed at the next startup of SETUP, and you can change setting.
Bootup Numlock State	On [Off]	Specify whether to enable or disable the Numlock state when the system starts up.
Setup Prompt Timeout	A number	Specify the time until the **F2** is pressed to launch SETUP during POST.
Boot Option Priorities	–	–
Boot Option #1	–	These items display the priority of boot devices. If all of the Boot Options are set to [Disabled], the SETUP starts running upon completion of POST.
Boot Option #2	–	
Boot Option #3	–	
Boot Option #4	–	

Option	Parameters	Description
CD/DVD ROM Drive BBS Priorities	–	Specify the boot priority for each BBS.
Floppy Drive BBS Priorities	–	
Hard Drive BBS Priorities	–	
Network Drive BBS Priorities	–	

[ ]: Factory-set

1. When BIOS detects a bootable device, it displays the information on the device for the relevant item.

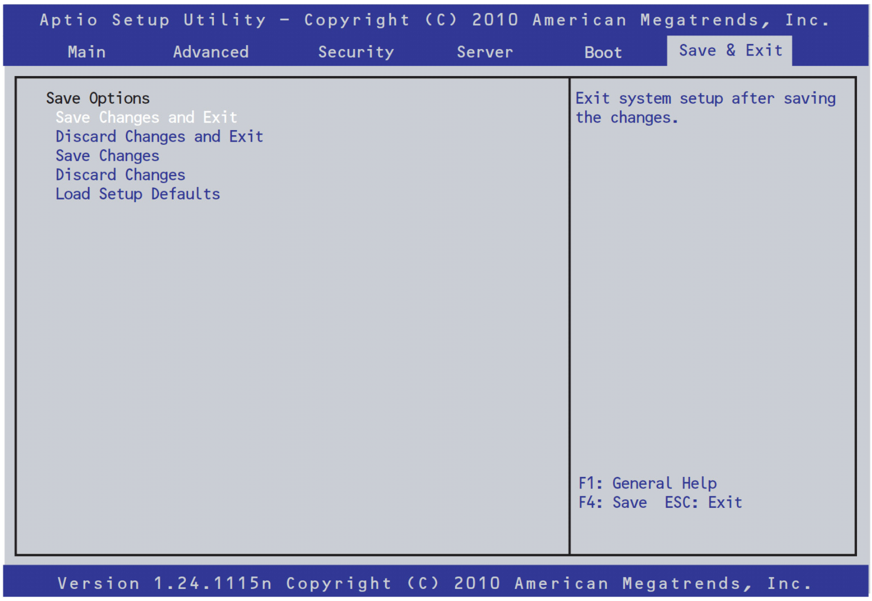
   To boot the server from a desired device, the device must be registered as a boot device. (Up to eight boot devices can be registered.)

2. You can change the boot priority (first to fourth) of each device by using the ↑, ↓, **+** and **–** keys.

   To change the priority of a device, move the cursor to the device by using the ↑ and ↓ keys, and then press the **+** or **–** key.

Save & Exit

When the cursor is moved to the [Save & Exit] position, the Save & Exit menu is displayed.



```
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
  Main      Advanced      Security      Server      Boot      Save & Exit

Save Options                                  Exit system setup after saving
 Save Changes and Exit                        the changes.
 Discard Changes and Exit
 Save Changes
 Discard Changes
 Load Setup Defaults

                                              F1: General Help
                                              F4: Save  ESC: Exit

Version 1.24.1115n Copyright (C) 2010 American Megatrends, Inc.
```

Each option in this menu is described below.

IMPORTANT: The factory settings and default values differ depending on the model. The settings must be corrected according to your environment by referring to the list of settings in this section.

Save Changes and Exit

Select this item to save the newly selected settings in the CMOS memory (which is non-volatile) and exit the setup utility. When [Save Changes and Exit] is selected, a confirmation screen is displayed.
If you select [Yes] on this screen, the newly selected settings are saved to the CMOS memory, the setup utility is closed, and the system automatically restarts.

Discard Changes and Exit

Select this item to exit the setup utility without saving the newly selected settings in the CMOS memory (which is non-volatile).

When this item is selected, the [Reset without saving?] confirmation screen is displayed, and, if you select [Yes], the setup utility is closed without saving the settings to the CMOS memory, and the system proceeds to the boot processing. If you select [No], the changed settings are saved to the CMOS memory, the setup utility is closed, and the system automatically restarts.

Save Changes

Select this item to save the newly selected settings in the CMOS memory. When [Save Changes] is selected, a confirmation screen is displayed.

If you select [Yes] on this screen, the newly selected settings are saved to the CMOS memory.

Discard Changes

Select this item to restore the settings from before the settings were changed this time before saving. When Discard Changes is selected, a confirmation screen is displayed.

If you select [Yes] on this screen, the newly selected settings are discarded, and the previous settings are restored.

Load Setup Defaults

Select this item to restore the default values for all setup utility settings. When Load Setup Defaults is selected, a confirmation screen is displayed.

If you select [Yes] on this screen, the default values for all setup utility settings are restored, and the Exit menu is redisplayed. If you select [No], the Exit menu is redisplayed.

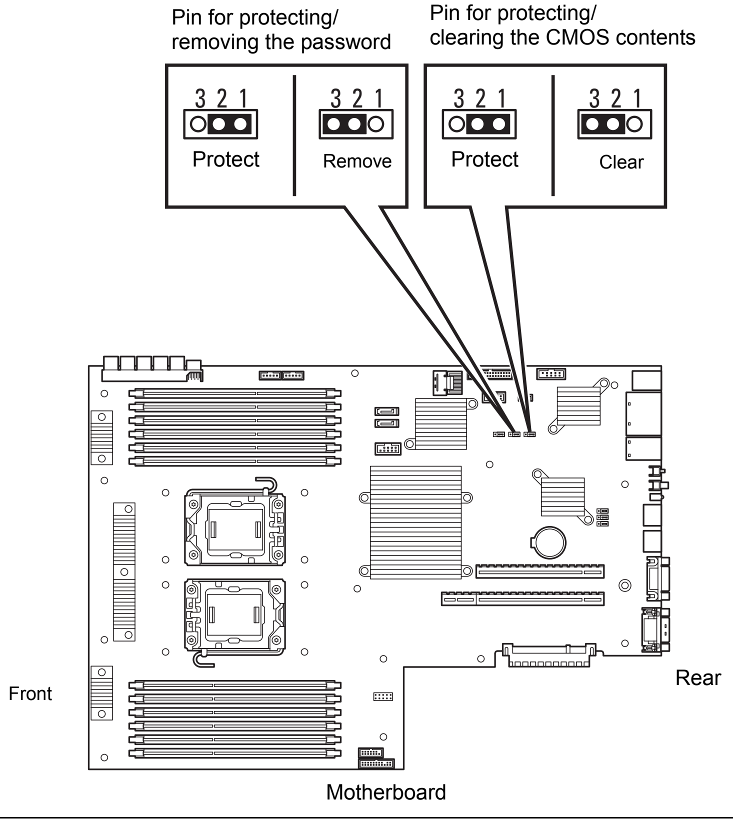
CONFIGURING MOTHERBOARD JUMPERS

With the pre-installed SETUP utility, you can set a password to protect the data stored in the server against access from unauthorized users. When you forget the password, however, you might have to remove it as described below. The procedure for clearing the CMOS data on the server is also described below.

Important:

- Clearing the CMOS data restores the factory settings.
- After clearing CMOS, you must run the BIOS SETUP utility and execute the following menus to reconfigure your motherboard.
  – Load Setup Defaults in the Save & Exit menu
  – Memory Retest of Memory Configuration in the Advanced menu
- Do not change any other switch settings. Any change may cause the server to fail or malfunction.

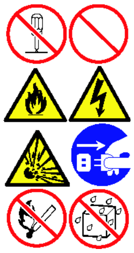
To remove the password or clear the CMOS data, use the corresponding jumper switch on the motherboard of the server. The following figure illustrates the jumper switch location.


Pin for protecting/
removing the password
Pin for protecting/
clearing the CMOS contents
3 2 1
Protect
3 2 1
Remove
3 2 1
Protect
3 2 1
Clear
Front
Rear

Motherboard

The following describe the clearing procedure.

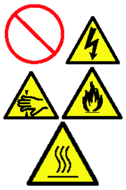
WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Do not connect the ground line to a gas pipe.

CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not lift the server by yourself.
- Make sure to complete board installation.
- Do not leave the covers off.
- Be careful not to get your fingers pinched.
- Note that the server and components get hot.
- Do not pull a server out of the rack if the rack is unstable.
- Do not leave more than one server pulled out of the rack.

Clearing CMOS Memory

1. See page 9-3 to prepare.
2. Pull the server out of the rack (as described on page 9-3).
3. Remove the logic cover (as described on page 9-25).
4. Locate the jumpers on the motherboard you are changing.
5. Move the jumper strap to the CMOS clear position.

   See the figure on the previous page. If the jumper switch is hard to access, remove the riser card as described on page 9-51.
6. Wait for a while (about 5 seconds), and then reinstall the jumper block to the default position.
7. Reinstall the server removed in Step 2.
8. Plug the power cord into your server and turn on the server.
9. Press **F2** at the prompt to run the BIOS SETUP utility, and select "Load Setup Defaults" at the Save & Exit menu.

Removing Password

1. Move the jumper switch to the password removal position in the same way as in steps 1 to 5 of "Clearing CMOS Memory".
2. Reassemble the server, and press the POWER switch to turn on the server.
3. Press **F2** during POST to run the BIOS Setup utility, set the password again, and select [Save Changes and Exit].
4. Turn off the server, and move the jumper strap to the password protect position.
5. Reassemble the server.

INTERRUPT LINES

Upon factory shipment, the interrupt line assignments are as shown below. See this table, for example, when adding options.

IRQ	Peripheral Device (Controller)	IRQ	Peripheral Device (Controller)
0	System timer	12	SM Bus
1	–	13	Numeric data processor
2	–	14	–
3	COM 2 serial port	15	–
4	COM 1 serial port	16	VGA, LAN1
5	PCI	17	LAN2, SATA
6	–	18	–
7	PCI	19	–
8	Real-time clock	20	USB
9	ACPI Compliant System	21	USB
10	PCI	22	USB
11	Motherboard resource	23	USB

Chapter 5

Installing the Operating System with Express Setup

This section describes information on using Express Setup to install and configure the following operating systems to the server.

- Microsoft® Windows Server® 2008 R2 Standard / Microsoft® Windows Server® 2008 R2 Enterprise
- Microsoft® Windows Server® 2008 Standard 64-bit (x64) Edition / Microsoft® Windows Server® 2008 Enterprise 64-bit (x64) Edition
- Microsoft® Windows Server® 2008 Standard 32-bit (x86) Edition / Microsoft® Windows Server® 2008 Enterprise 32-bit (x86) Edition
- Microsoft® Windows Server® 2003 R2 Standard Edition / Microsoft® Windows Server® 2003 R2 Enterprise Edition

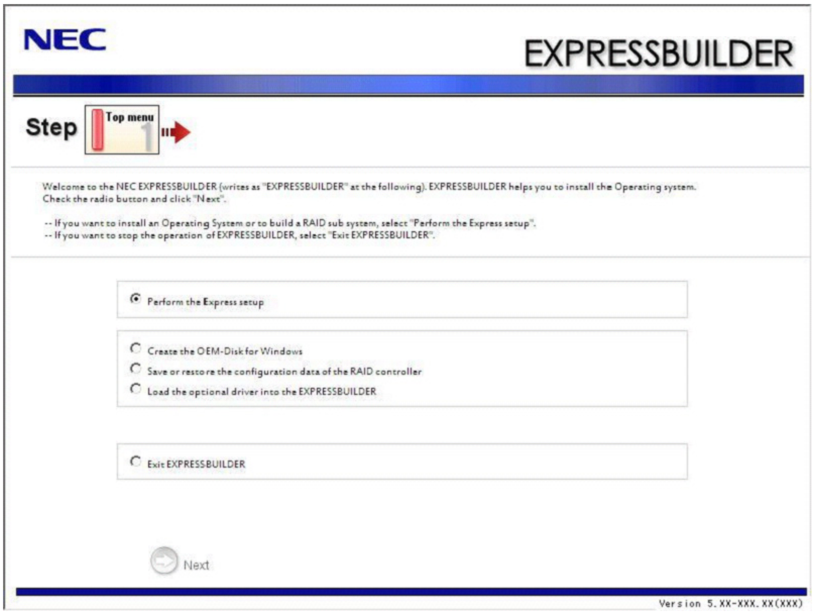
To use the server with the other operating systems described in this section, contact your service representative.

IMPORTANT: Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See Chapter 4 for detail.

About Express Setup

"Express Setup" helps you to install the Windows Operating System. The setup automatically configures the RAID System and installs the Operating System and some management software.

IMPORTANT: Executing the Express Setup erases all data on the hard disk drive.



Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

You can also use "Parameter File" at "Express Setup" in order to save or backup parameters for installation.

If you want to set up the server as before, execute the Express Setup with the parameter file you have saved before.

NOTES:

- If you want to create a parameters file, have a blank floppy disk (MS-DOS 1.44MB format) ready.
- When using a floppy disk, a USB floppy disk drive is required.
- If you want to use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards, a parameters file is mandatory.
- You can create a parameters file in advance using "Parameter File Creator" included in NEC EXPRESSBUILDER.

Windows Server 2008 R2

This section explains how to install Windows Server 2008 R2 by using the Express Setup.

IMPORTANT: The Scalable Networking Pack (SNP) function is disabled in the system that installed by Express Setup.

The setting of SNP function may affect the system performance, so refer to the attention of SNP detail in the following site before setting it.

http://www.nec.com/global/prod/express/

NOTE: If you install Windows Server 2008 R2 without using Express Setup, see Appendix D.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows Family

This computer supports the following Windows editions:

- Windows Server 2008 R2 Standard (hereinafter, referred to as "Windows Server 2008 R2")
- Windows Server 2008 R2 Enterprise (hereinafter, referred to as "Windows Server 2008 R2")

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2008 R2.

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD-ROM attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008 R2
  - OS installation media (No Service Pack)

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD-ROM attached to your system supports the following mass storage controllers for installation.

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID controller (256MB, RAID 0/1)*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8190-127 Fibre Channel Controller*
  - N8190-131 Fibre Channel Controller (2ch)*
  - N8190-153 Fibre Channel Controller (1ch)*
  - N8190-154 Fibre Channel Controller (2ch)*

  * Option

About the Hardware Components

When you install the Windows Server 2008 R2, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using Disk Management, invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using Disk Management in Computer Management.

Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create the Windows system drive.

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" (5-100).

Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2008 R2 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix D to re-install the system.

Peripheral Devices such as RDX

Depending on your hardware configuration, some peripheral devices need to be removed or disabled before starting setup. Refer to the instruction manual which came with the peripheral device for pertinent information, and proceed accordingly.

About the System Partition Size

When the system is Windows Server 2008 R2

Required partition size =
size required to install OS + paging file size + dump file size + application size

Size required to install OS = 8,000MB (Full Installation)
or
= 3,500MB (Server Core Installation)
Paging file size (recommended) = Installed memory size * 1.5
Dump file size = Installed memory size + 300MB
Application size = Required size

IMPORTANT:

- The above-mentioned partition size is the minimum partition size required for system installation. Ensure sufficient partition size for system operation.

  Following numbers are the recommended size.

  – Full Installation: 32,768MB (32GB) or more

  – Server Core Installation: 10,240MB (10GB) or more

  *1GB = 1,024MB

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the Windows Partition is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.

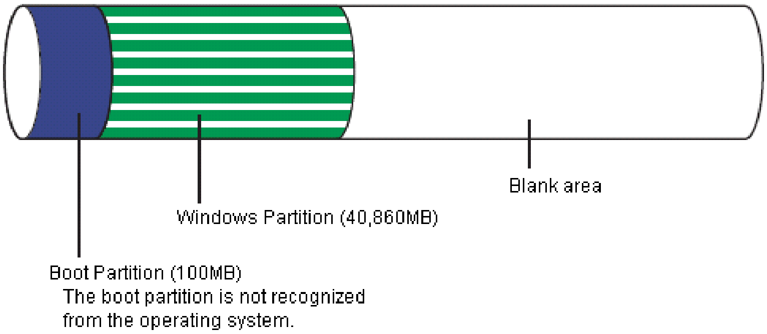
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.

- If you install any application program or the like, add necessary space to the partition to install these programs.

NOTE: When new partition is created, initial 100MB is assigned as boot partition by Windows OS.

Example:

If you make a partition of 40,960MB (40GB), usable space will be 40,960MB – 100MB = 40,860MB.


Blank area
Windows Partition (40,860MB)
Boot Partition (100MB)
The boot partition is not recognized from the operating system.

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

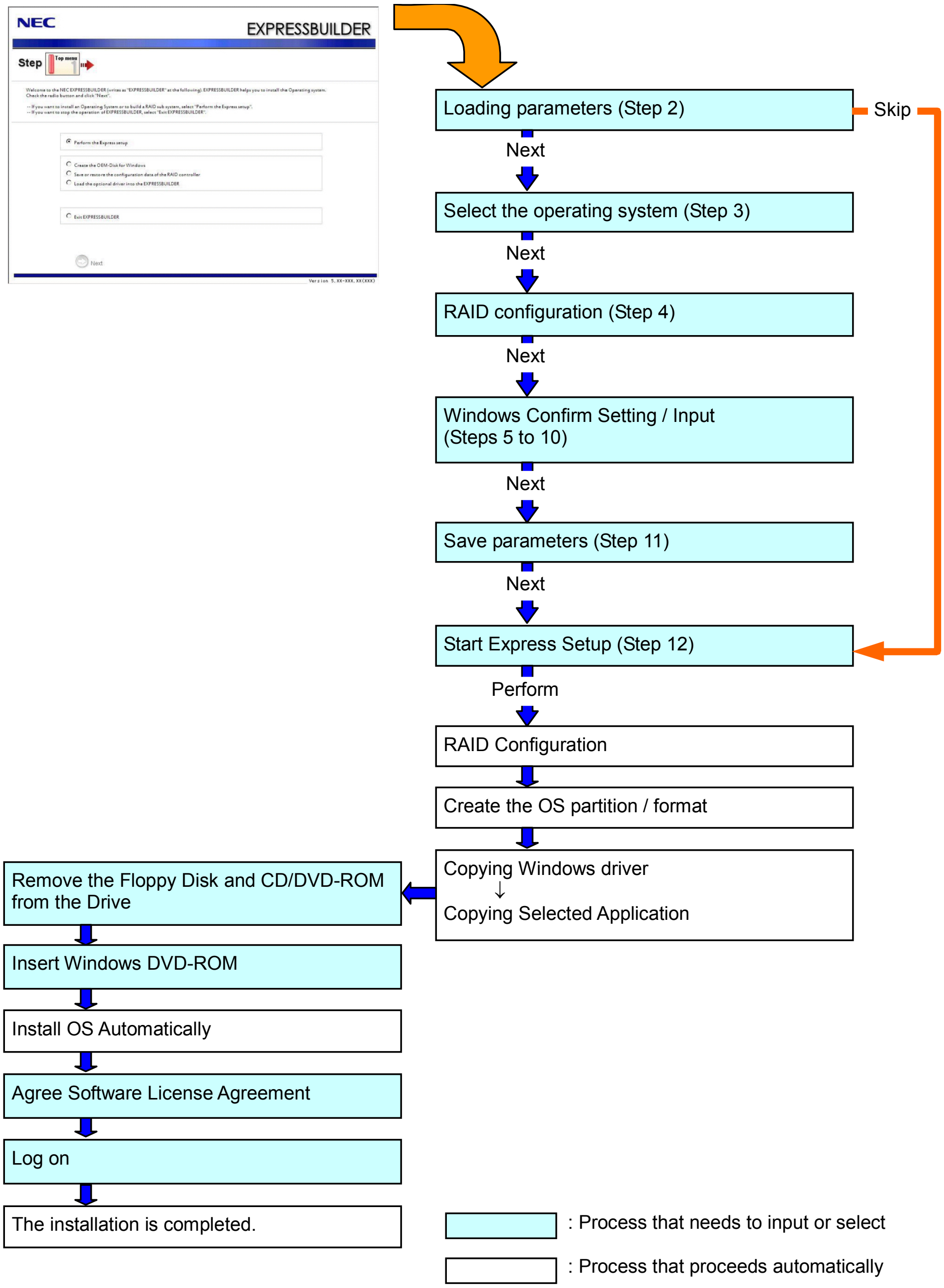
8,000MB + (1,024MB * 1.5) + (1,024MB + 300MB) + application size
= 10,860MB + application size.

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

Flow of Setup



NEC EXPRESSBUILDER

Step Top menu 1

Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

Next

Version 5.XX-XXX.XX(XXX)

Loading parameters (Step 2)
Skip
Next
Select the operating system (Step 3)
Next
RAID configuration (Step 4)
Next
Windows Confirm Setting / Input (Steps 5 to 10)
Next
Save parameters (Step 11)
Next
Start Express Setup (Step 12)
Perform
RAID Configuration
Create the OS partition / format
Copying Windows driver
↓
Copying Selected Application
Remove the Floppy Disk and CD/DVD-ROM from the Drive
Insert Windows DVD-ROM
Install OS Automatically
Agree Software License Agreement
Log on
The installation is completed.
: Process that needs to input or select
: Process that proceeds automatically

Installing the Windows Server 2008 R2

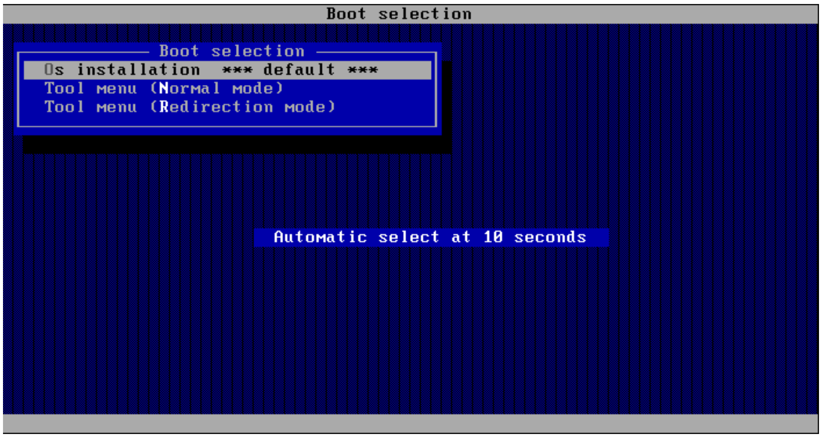
Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD and NEC EXPRESSBUILDER starts.

   Select "Os installation *** default ***" from the Boot selection menu.
   (If you do not hit any key, "Os installation" is selected automatically.)

   The Top menu will appear.

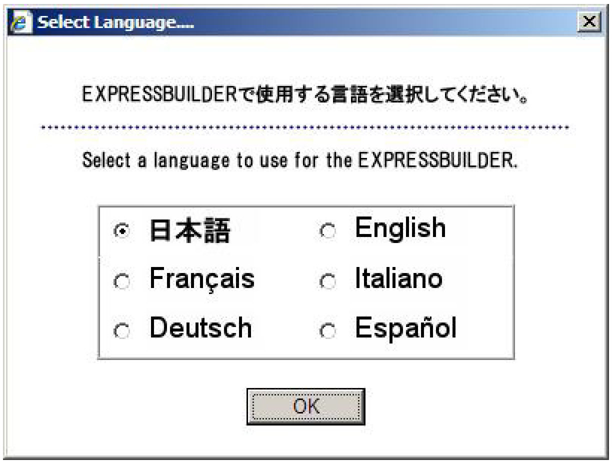


```
                    Boot selection

 ------ Boot selection ------
 Os installation    *** default ***
 Tool menu (Normal mode)
 Tool menu (Redirection mode)

                         Automatic select at 10 seconds
```

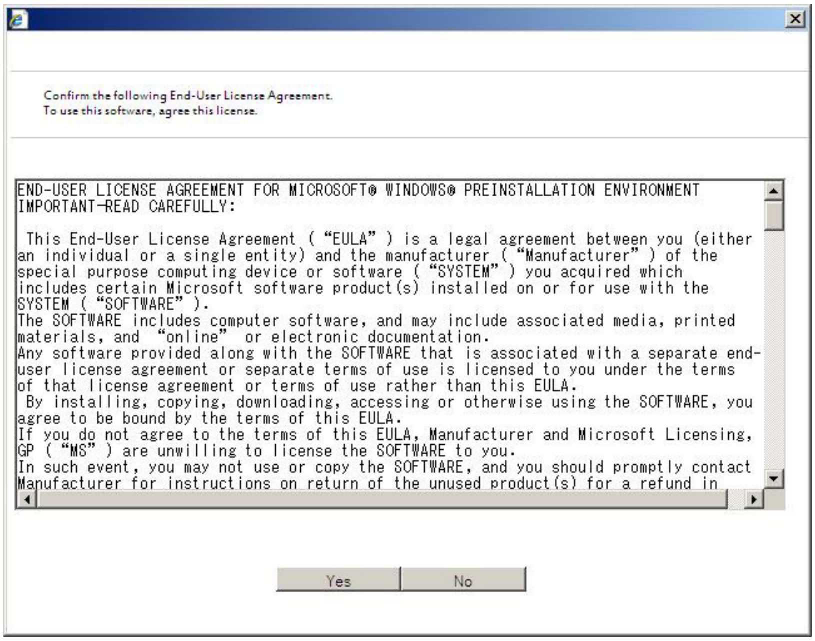
4. Select [English] from the Select Language, click [OK].



EXPRESSBUILDERで使用する言語を選択してください。

Select a language to use for the EXPRESSBUILDER.

5. When the Software License Agreement screen of Windows PE appears, click [Yes].



Confirm the following End-User License Agreement.
To use this software, agree this license.

END-USER LICENSE AGREEMENT FOR MICROSOFT® WINDOWS® PREINSTALLATION ENVIRONMENT
IMPORTANT-READ CAREFULLY:

This End-User License Agreement (“EULA”) is a legal agreement between you (either an individual or a single entity) and the manufacturer (“Manufacturer”) of the special purpose computing device or software (“SYSTEM”) you acquired which includes certain Microsoft software product(s) installed on or for use with the SYSTEM (“SOFTWARE”).
The SOFTWARE includes computer software, and may include associated media, printed materials, and “online” or electronic documentation.
Any software provided along with the SOFTWARE that is associated with a separate end-user license agreement or separate terms of use is licensed to you under the terms of that license agreement or terms of use rather than this EULA.
By installing, copying, downloading, accessing or otherwise using the SOFTWARE, you agree to be bound by the terms of this EULA.
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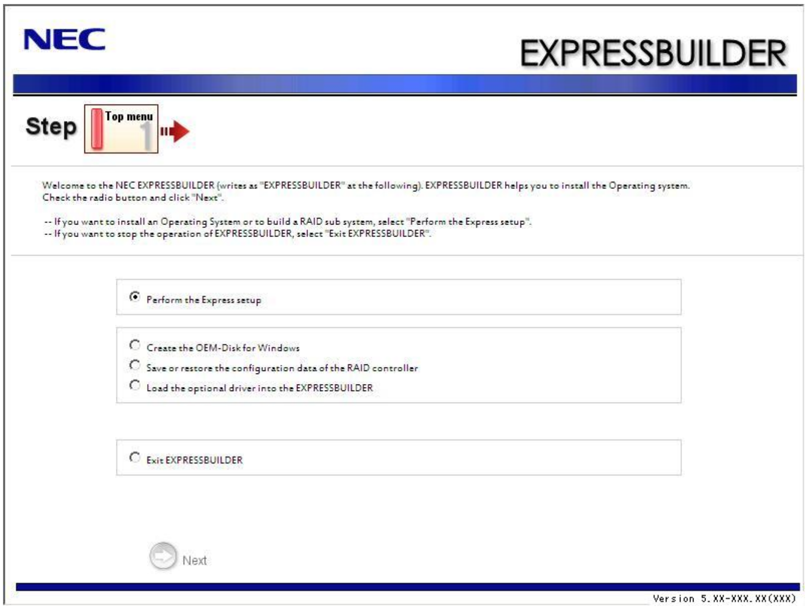
In such event, you may not use or copy the SOFTWARE, and you should promptly contact Manufacturer for instructions on return of the unused product(s) for a refund in

6. Select [Perform the Express setup] from the Top Menu, click [Next].



Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

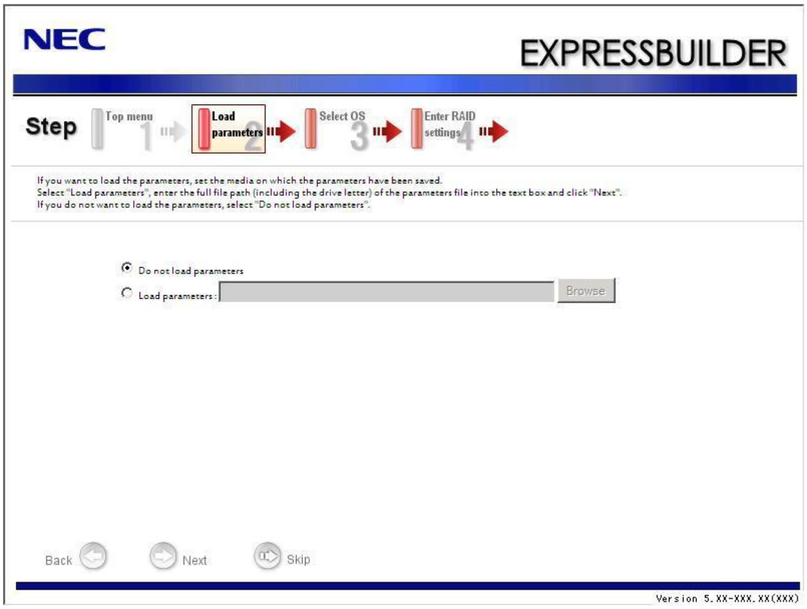
● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

Version 5.XX-XXX.XX(XXX)

7. [Load parameters] steps are displayed.



NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Browse
Back
Next
Skip
Version 5.XX-XXX.XX(XXX)

If you want to load the parameters, set the media on which the parameters have been saved.
Select "Load parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to load the parameters, select "Do not load parameters".

● Do not load parameters

○ Load parameters:

[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

IMPORTANT: The setup using a parameter file saved in the Flash FDD is not supported.

NOTE: If a floppy disk drive is not connected, select this item.

[Load parameters]

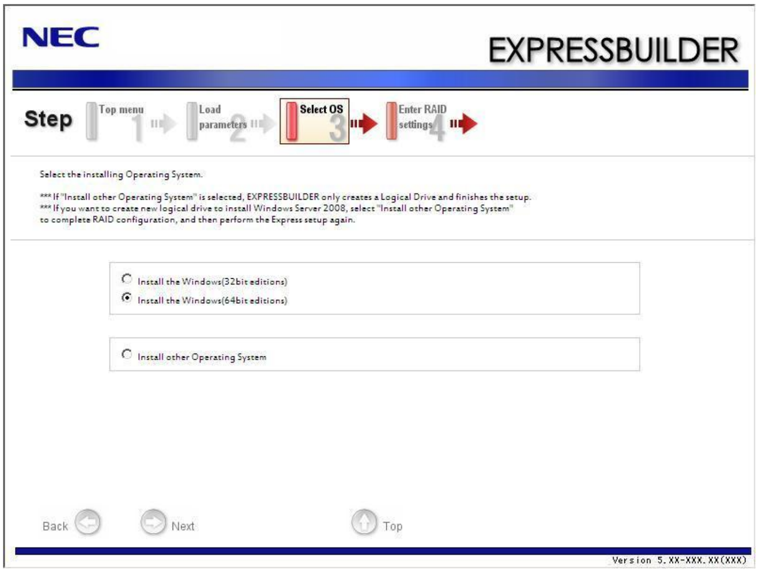
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

8. Select the installing Operating System.

Select [Install the Windows (64bit editions)] from the menu, click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

Select the installing Operating System.

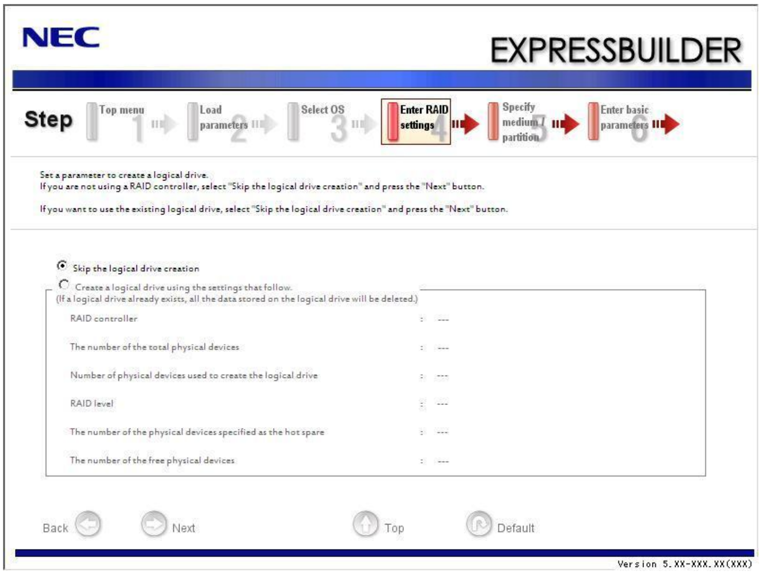
*** If "Install other Operating System" is selected, EXPRESSBUILDER only creates a Logical Drive and finishes the setup.
*** If you want to create new logical drive to install Windows Server 2008, select "Install other Operating System"
to complete RAID configuration, and then perform the Express setup again.

○ Install the Windows(32bit editions)
● Install the Windows(64bit editions)

○ Install other Operating System

9. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.

If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.

● Skip the logical drive creation
○ Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)

RAID controller : ---
The number of the total physical devices : ---
Number of physical devices used to create the logical drive : ---
RAID level : ---
The number of the physical devices specified as the hot spare : ---
The number of the free physical devices : ---

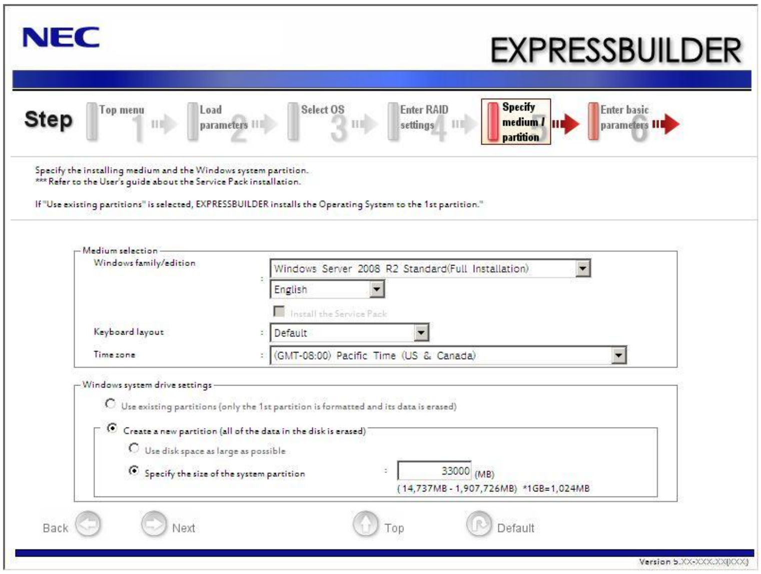
NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

---

10. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition."

Medium selection

Windows family/edition : Windows Server 2008 R2 Standard(Full Installation)
English
☐ Install the Service Pack

Keyboard layout : Default

Time zone : (GMT-08:00) Pacific Time (US & Canada)

Windows system drive settings

○ Use existing partitions (only the 1st partition is formatted and its data is erased)

● Create a new partition (all of the data in the disk is erased)

○ Use disk space as large as possible

● Specify the size of the system partition : 33000 (MB)
(14,737MB - 1,907,726MB) *1GB=1,024MB

IMPORTANT:

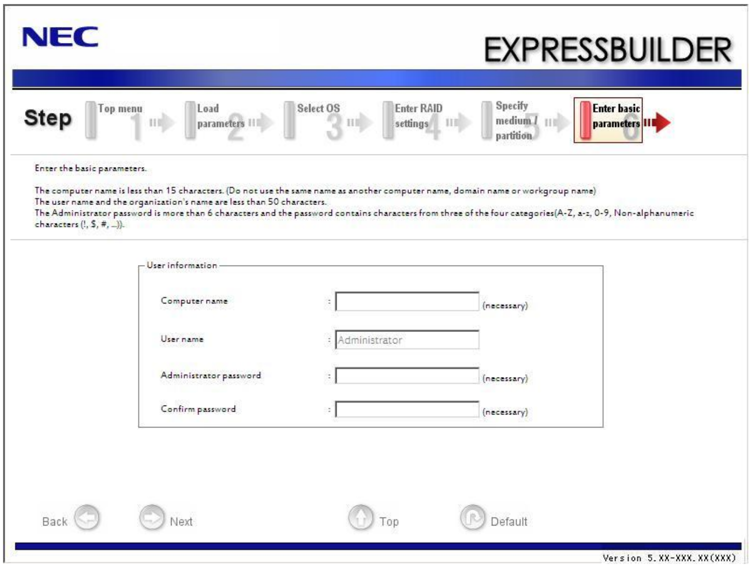
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the Windows partition (The Boot partition (if it exists) and the Windows partition are deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

Boot Partition Deleted	Windows Partition Deleted	User Data Partition Retained

- You cannot re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

11. Enter the user information.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6
User information
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

Enter the basic parameters.

The computer name is less than 15 characters. (Do not use the same name as another computer name, domain name or workgroup name)
The user name and the organization's name are less than 50 characters.
The Administrator password is more than 6 characters and the password contains characters from three of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, $, #, ...)).

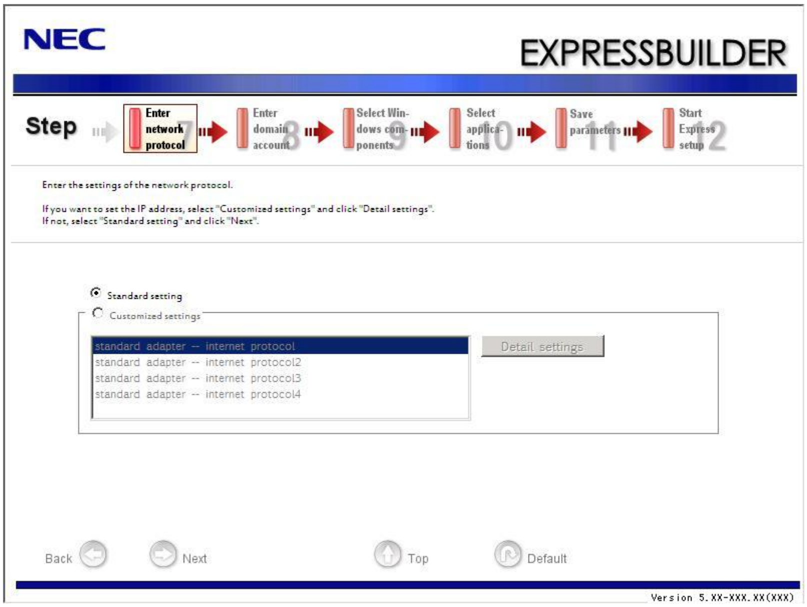
Computer name : (necessary)
User name : Administrator
Administrator password : (necessary)
Confirm password : (necessary)

IMPORTANT: Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

12. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Detail settings
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

Enter the settings of the network protocol.

If you want to set the IP address, select "Customized settings" and click "Detail settings".
If not, select "Standard setting" and click "Next".

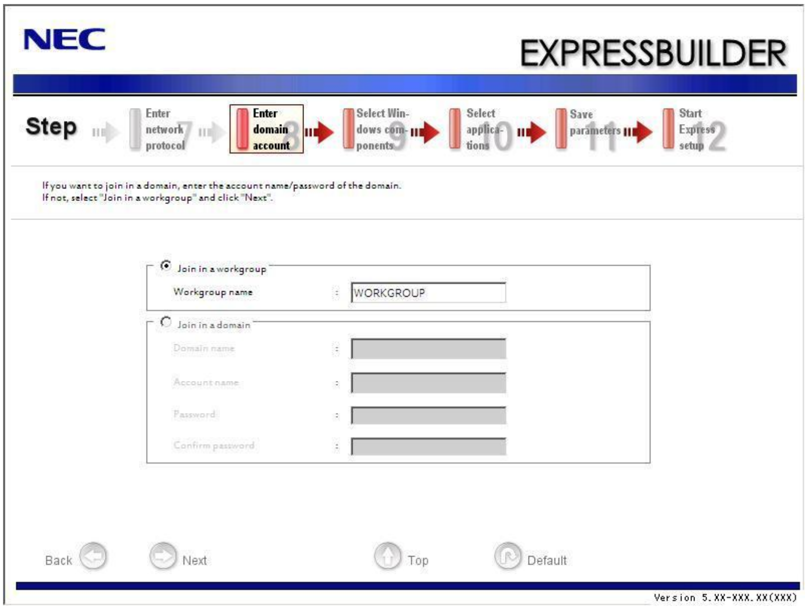
● Standard setting

○ Customized settings

- standard adapter -- internet protocol
- standard adapter -- internet protocol2
- standard adapter -- internet protocol3
- standard adapter -- internet protocol4

13. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

If you want to join in a domain, enter the account name/password of the domain.
If not, select "Join in a workgroup" and click "Next".

● Join in a workgroup

Workgroup name : WORKGROUP

○ Join in a domain

Domain name :

Account name :

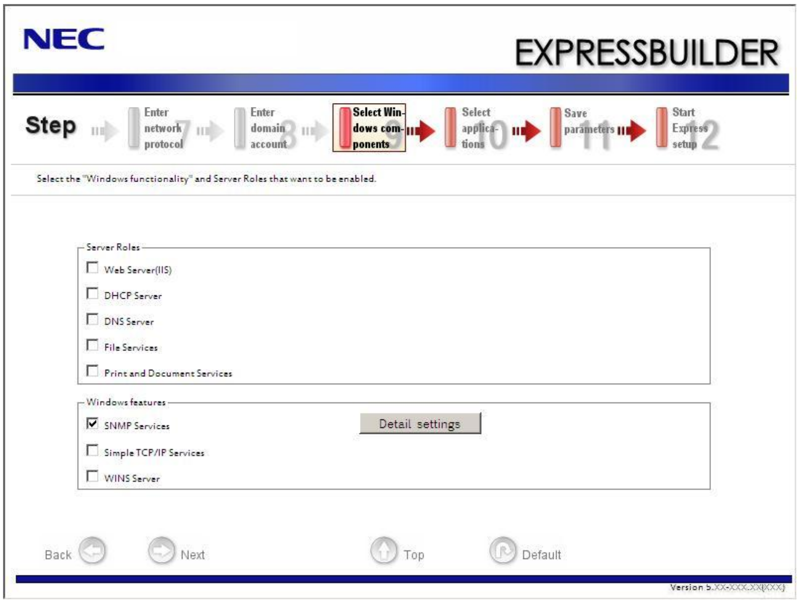
Password :

Confirm password :

14. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

<Full Installation>

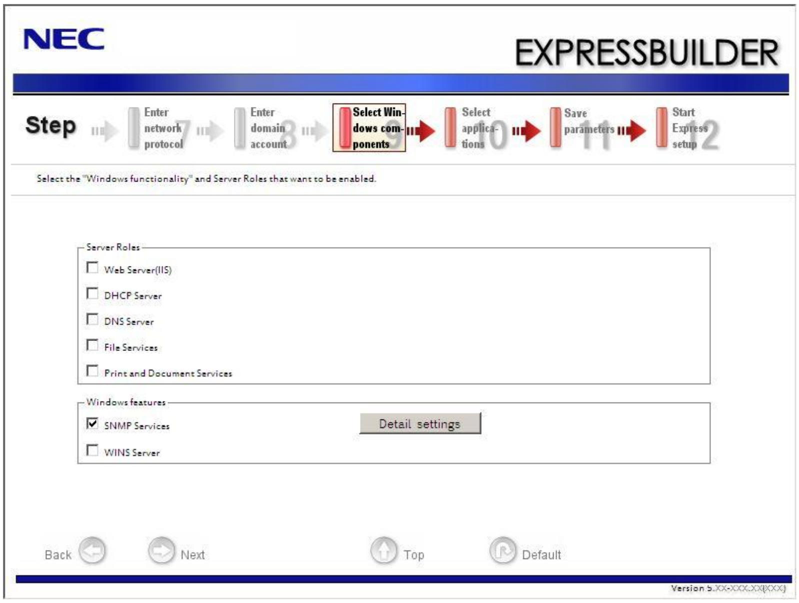

NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Detail settings
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

Select the "Windows functionality" and Server Roles that want to be enabled.

Server Roles
- ☐ Web Server(IIS)
- ☐ DHCP Server
- ☐ DNS Server
- ☐ File Services
- ☐ Print and Document Services

Windows features
- ☑ SNMP Services
- ☐ Simple TCP/IP Services
- ☐ WINS Server

<Server Core Installation>


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Detail settings
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

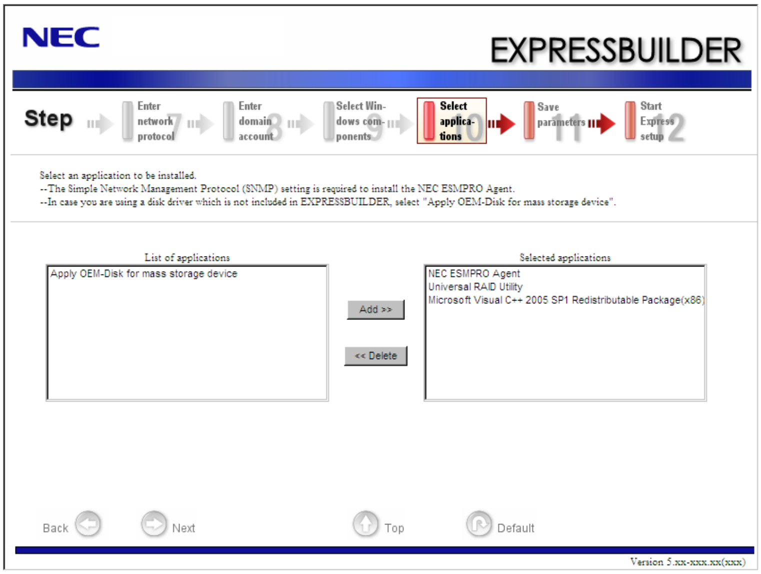
Select the "Windows functionality" and Server Roles that want to be enabled.

Server Roles
- ☐ Web Server(IIS)
- ☐ DHCP Server
- ☐ DNS Server
- ☐ File Services
- ☐ Print and Document Services

Windows features
- ☑ SNMP Services
- ☐ WINS Server

15. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
List of applications
Selected applications
Add >>
<< Delete
Back
Next
Top
Default
Version 5.xx-xxx.xx(xxx)

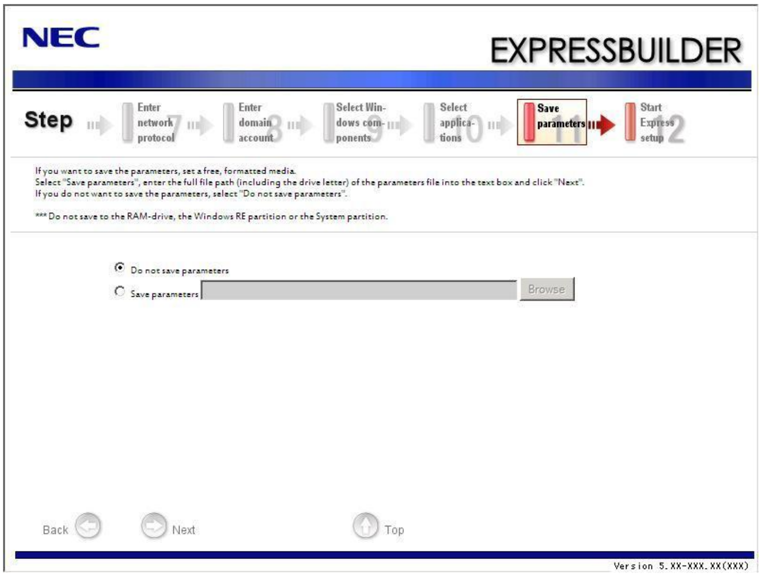
Select an application to be installed.
--The Simple Network Management Protocol (SNMP) setting is required to install the NEC ESMPRO Agent.
--In case you are using a disk driver which is not included in EXPRESSBUILDER, select "Apply OEM-Disk for mass storage device".

List of applications:
- Apply OEM-Disk for mass storage device

Selected applications:
- NEC ESMPRO Agent
- Universal RAID Utility
- Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)

16. Save the parameters.

[Save parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Browse
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

If you want to save the parameters, set a free, formatted media.
Select "Save parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to save the parameters, select "Do not save parameters".

*** Do not save to the RAM-drive, the Windows RE partition or the System partition.

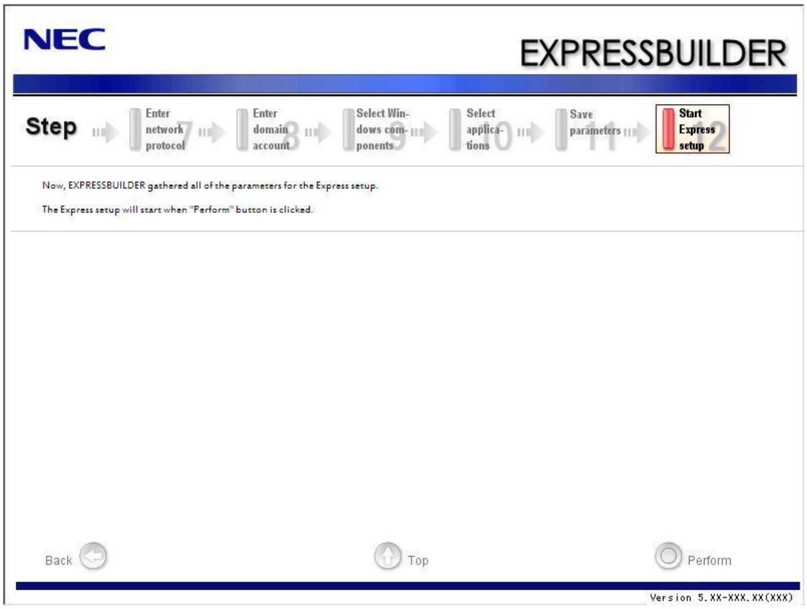
● Do not save parameters
○ Save parameters

If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

17. The Express Setup will start when you click [Perform] in [Start Express setup] step.


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Back
Top
Perform
Version 5.XX-XXX.XX(XXX)

Now, EXPRESSBUILDER gathered all of the parameters for the Express setup.

The Express setup will start when "Perform" button is clicked.

18. Remove NEC EXPRESSBUILDER DVD-ROM from the optical disk drive according to the message.

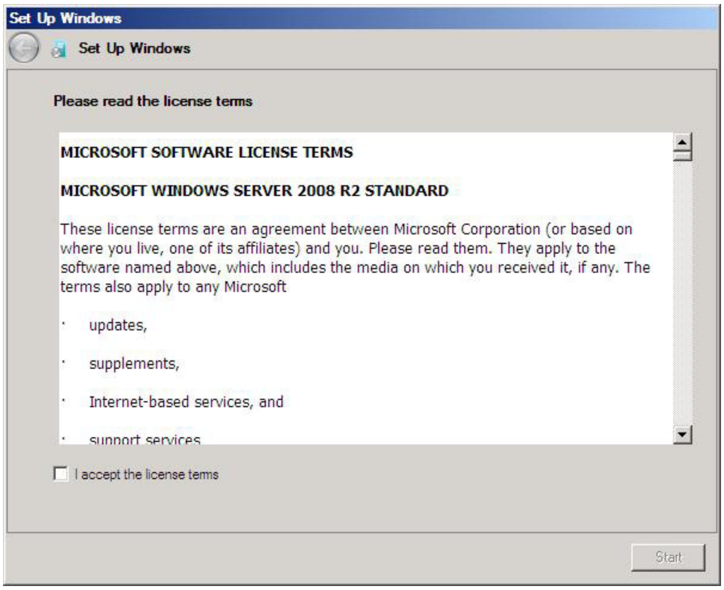
    If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

19. Insert Windows Server 2008 R2 DVD-ROM into the optical disk drive.

> **NOTE:** Windows Server 2008 R2 and selected applications will be installed automatically and reboots several times.

20. [Agree Software License Agreement] screen appears. (Full Installation only)

Read the license terms carefully. If you agree, select I accept the license terms, and then click [Next].



Set Up Windows

Set Up Windows

Please read the license terms

MICROSOFT SOFTWARE LICENSE TERMS

MICROSOFT WINDOWS SERVER 2008 R2 STANDARD

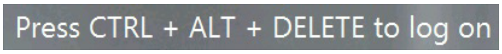
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft

- updates,
- supplements,
- Internet-based services, and
- support services

☐ I accept the license terms

Start

21. When the following message appears, press **Ctrl** + **Alt** + **Del**.

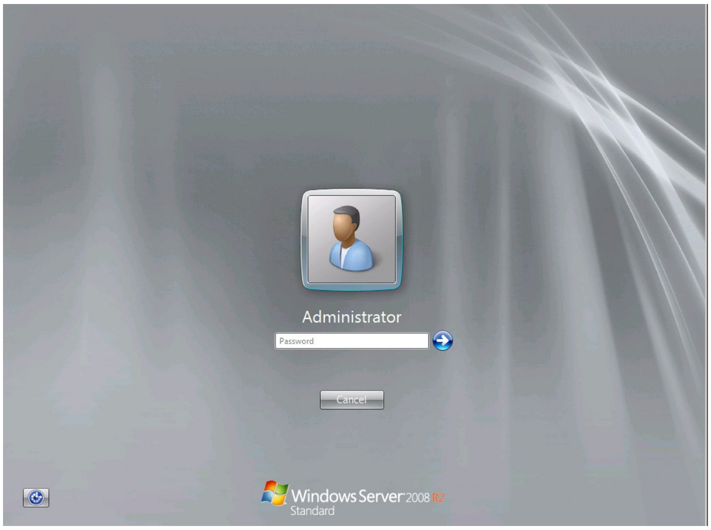


Press CTRL + ALT + DELETE to log on

22. Log on to the system.

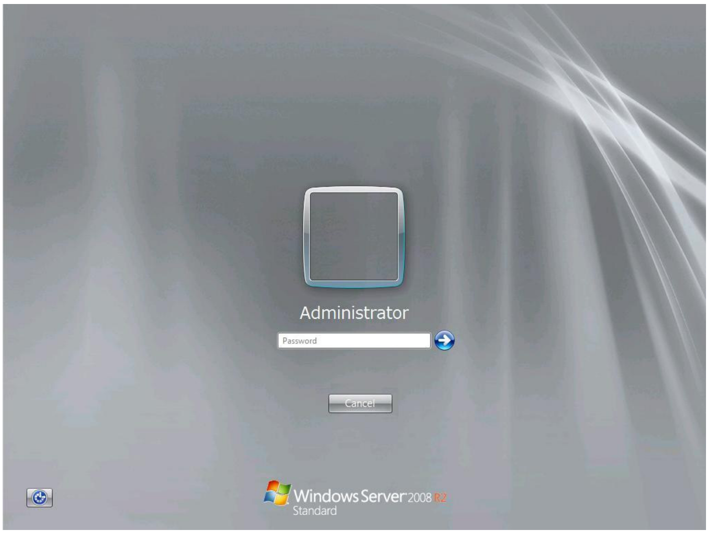
<Full Installation>

When the following screen appears, enter your password into "Password", and click ➔.



<Server Core Installation>

In the following screen, enter your password into "Password", and click ➔.


Administrator
Password
Cancel
Windows Server 2008 R2
Standard

Hereinafter, proceed operations according to the message.

Now the Setup using Express Setup has completed.

After Express Setup has completed, be sure to execute the tasks described in "Installing and Setting Device Drivers".

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

NOTES:

- To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.
- [Internet Protocol (TCP/IP)] check-box is necessary checked to set an IP Addresses. According to the circumstances, the check-box is not checked from begin. Manually checked the check box and set an IP addresses.

LAN Driver Setting

■ Link Speed

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

■ WOL

Refer to the following procedure for WOL(Wake On LAN) setting.

1. Start Device Manager.
2. Point to [Network adapters] and double click following adapter.

   Open the adapter [Properties].

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection]

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection #2]
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	**Using WOL**	**Not using WOL**
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF
"Wake on Pattern Match"	OFF	OFF

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

4. Click [OK].
5. Restart the system.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

Setup Team

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
- Confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
- Teaming is not supported with Windows Server Core.
- If you want to change the type of a teaming, be sure to remove the teaming first, then re-setup a new teaming. Do not use the function of PROSet to change the type of a teaming.

■ Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].
6. Select a team mode, and then click [Next].

   IMPORTANT: Following team types are supported.

   - Adapter Fault Tolerance
   - Adaptive Load Balancing
   - Static Link Aggregation
   - Switch Fault Tolerance
7. Click [Finish].

   IMPORTANT: Teaming an adapter with standard network adapter and optional network adapter will cause the following message appear.

   Click [OK] and continue the setting.

   "One or more adapters in the team do not support true NDIS6.20 Receive-Side Scaling, Receive-Side Scaling will be disabled for the team, Disabling Receive-Side Scaling will negatively impact the performance of the team."
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team.

   Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.
   - – Set Primary

     Point the adapter and click [Set Primary] button.
   - – Set Secondary

     Point the adapter and click [Set Secondary] button.

NOTE: Adapter priority config can be confirmed by the following procedure:

1. Click [TEAM: "Team name"] from [Device manager]→[Network adapters].
2. Click [Settings] and confirm Adapters in team list.

---

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

Confirm the result in [Test results]

11. Restart the system.

■ Remove Team

1. Open the [Device Manager].

2. Click [Network adapters], and open [TEAM: "Team name"] properties.

3. Click [Setting] tab.

4. Click [Remove Team] button.

5. Click [Yes] to the message.

6. Confirm [TEAM: "Team name"] adapter in not existing in [Network adapters] tree and reboot the system.

LAN Board Driver (N8104-121/122/125A/126)

The drivers for LAN Board Driver (N8104-121/122/125A/126) are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Refer to "Graphics Accelerator Driver" described in Appendix D when you want to reinstall the driver individually.

Installing SCSI Controller Driver (N8103-75/107)

If you use the SCSI Controller N8103-75/107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing Fibre Channel Controller Driver (N8190-127/131/153/154)

If you use the Fibre Channel Controller N8190-127/131/153/154, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Setting for Solving Problems

Setup your computer in advance so that it can recover from any trouble precisely and as soon as possible when it should occur.

For more information, refer to Page 5-88.

BitLocker

For BitLocker, hotfix is provided by Microsoft. Before applying hotfix, check the information written by Microsoft carefully.

For more information, visit http://support.microsoft.com/kb/975496/en-us.

Windows Server 2008

This section explains how to install Windows Server 2008 by using the Express Setup.

IMPORTANT:

- The Scalable Networking Pack (SNP) function is disabled in the system that installed by Express Setup.

  The setting of SNP function may affect the system performance, so please refer to the attention of SNP detail in the following site before setting it.
  http://www.nec.com/global/prod/express/

- Refer to the public information of SNP function when KB967224 is not applied. Notes are described about KB967224.

NOTE: If you install Windows Server 2008 without using Express Setup, see Appendix E.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows Family

This computer supports the following Windows editions:

- Windows Server 2008 Standard 64-bit (x64) Edition / Windows Server 2008 Enterprise 64-bit (x64) Edition (hereinafter, referred to as "Windows Server 2008")
- Windows Server 2008 Standard 32-bit (x86) Edition / Windows Server 2008 Enterprise 32-bit (x86) Edition (hereinafter, referred to as "Windows Server 2008")

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2008.

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD-ROM attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD-ROM attached to your system supports the following mass storage controllers for installation.

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID controller (256MB, RAID 0/1)*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8190-127 Fibre Channel Controller*
  - N8190-131 Fibre Channel Controller (2ch)*
  - N8190-153 Fibre Channel Controller (1ch)*
  - N8190-154 Fibre Channel Controller (2ch)*

  * Option

About the Hardware Components

When you install the Windows Server 2008, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using Disk Management, invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using Disk Management in Computer Management.

Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create the Windows system drive.

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" (5-100).

Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2008 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix E to re-install the system.

Peripheral Devices such as RDX

Depending on your hardware configuration, some peripheral devices need to be removed or disabled before starting setup. Refer to the instruction manual which came with the peripheral device for pertinent information, and proceed accordingly.

About the System Partition Size

The system partition size can be calculated from the following formula.

When the system is Windows Server 2008 64-bit (x64) Edition:

Required partition size
= Size required to install OS + paging file size + dump file size + application size

Size required to install OS = 11,600MB (Full Installation)
12,300MB (Full Installation with Service Pack 2)
16,720MB (Full Installation + Service Pack 2)
or
= 4,100MB (Server Core Installation)
4,800MB (Server Core Installation with Service Pack 2)
9,220MB (Server Core Installation + Service Pack 2)
Paging file size (recommended) = Installed memory size * 1.5
Dump file size = Installed memory size + 300MB
Application size = Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

11,600MB + (1,024MB * 1.5) + (1,024MB + 300MB) + application size
= 14,460MB + application size.

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk.

If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file on to another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

When the system is Windows Server 2008 32-bit (x86) Edition

Required partition size
= Size required to install OS + paging file size + dump file size + application size

Size required to install OS = 6,300MB (Full Installation)
9,300MB (Full Installation with Service Pack 2)
9,400MB (Full Installation + Service Pack 2)

or

= 2,200MB (Server Core Installation)
5,200MB (Server Core Installation with Service Pack 2)
5,300MB (Server Core Installation + Service Pack 2)

Paging file size (recommended) = Installed memory size * 1.5
Dump file size = Installed memory size + 300MB
Application size = Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Depending on system configuration, 4096MB or more per partition might not be able to be set to the paging file size.
  Set it to 4095MB when the message to ask a value that is smaller than 4096MB is displayed.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

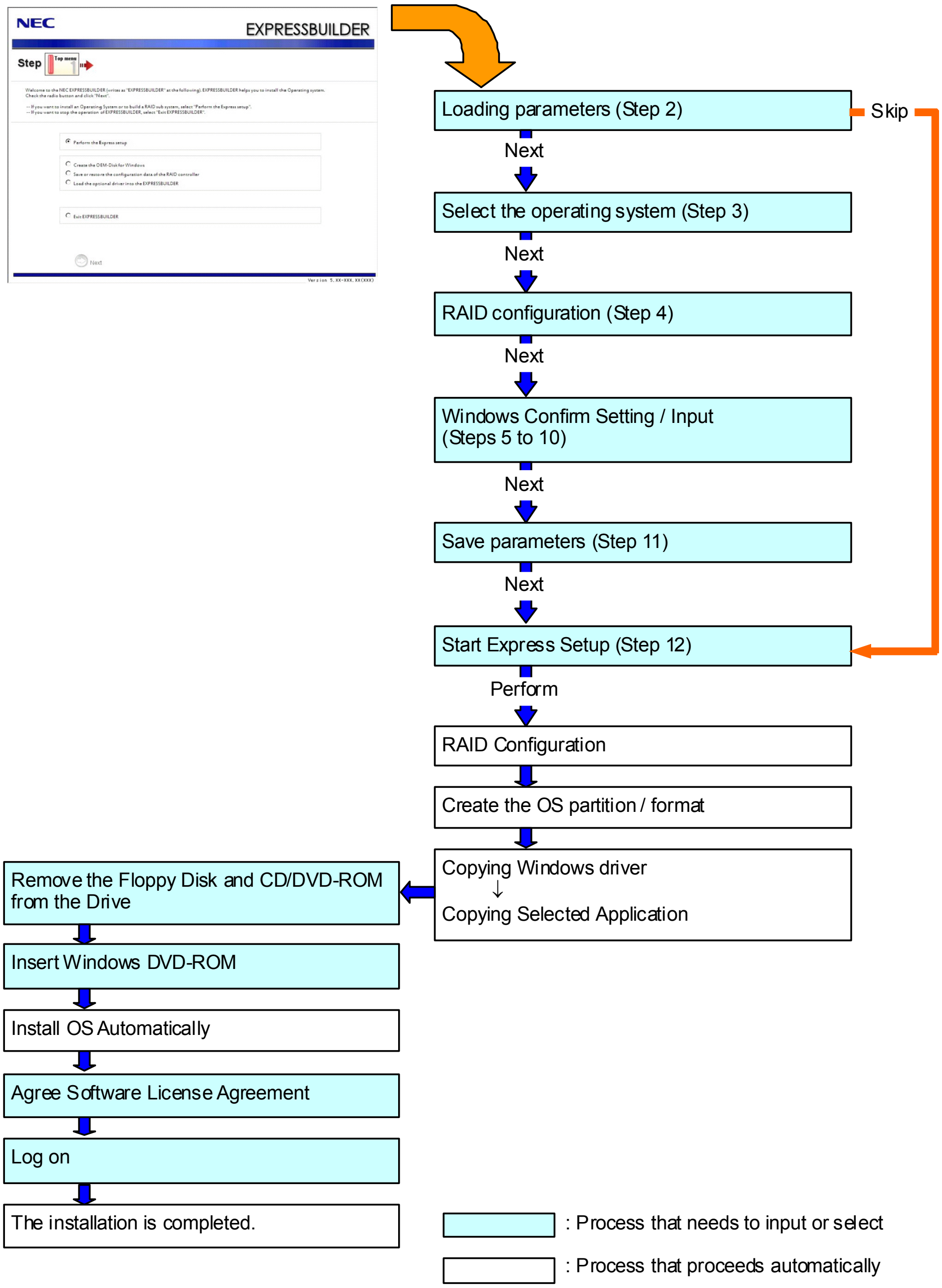
6,300MB + (1,024MB * 1.5) + 1,024MB + 300MB + application size
= 9,160MB + application size.

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file on to another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

Flow of Setup



Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

NEC
EXPRESSBUILDER
Step
Top menu
1
Next
Version 5.XX-XXX.XX(XXX)
Loading parameters (Step 2)
Skip
Next
Select the operating system (Step 3)
Next
RAID configuration (Step 4)
Next
Windows Confirm Setting / Input (Steps 5 to 10)
Next
Save parameters (Step 11)
Next
Start Express Setup (Step 12)
Perform
RAID Configuration
Create the OS partition / format
Copying Windows driver
↓
Copying Selected Application
Remove the Floppy Disk and CD/DVD-ROM from the Drive
Insert Windows DVD-ROM
Install OS Automatically
Agree Software License Agreement
Log on
The installation is completed.
: Process that needs to input or select
: Process that proceeds automatically

Installing the Windows Server 2008

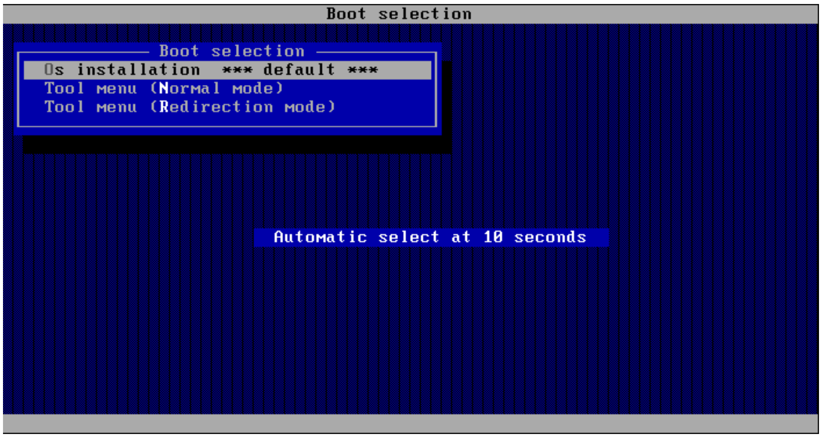
Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

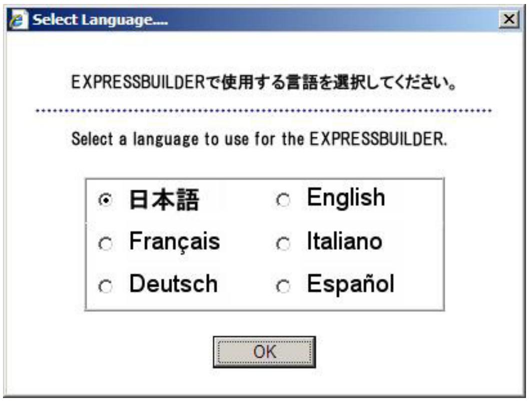
   The system will boot from the DVD and NEC EXPRESSBUILDER starts.

   Select "Os installation *** default ***" from the Boot selection menu.
   (If you do not hit any key, "Os installation" is selected automatically.)

   The Top menu will appear.


Boot selection
Boot selection
Os installation *** default ***
Tool menu (Normal mode)
Tool menu (Redirection mode)
Automatic select at 10 seconds

4. Select [English] from the Select Language, click [OK].

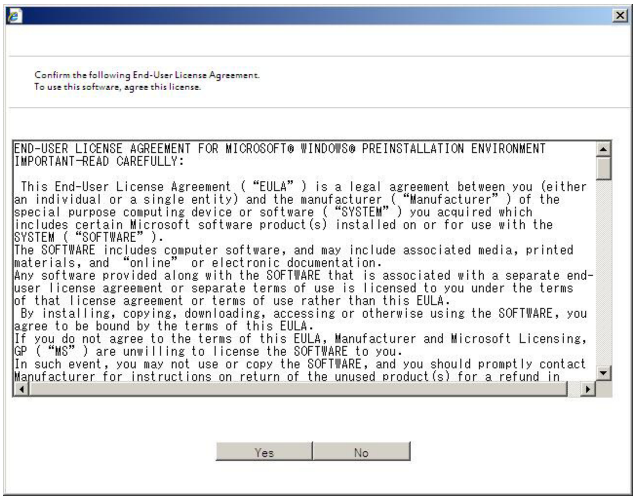


EXPRESSBUILDERで使用する言語を選択してください。

Select a language to use for the EXPRESSBUILDER.

● 日本語 ○ English
○ Français ○ Italiano
○ Deutsch ○ Español

5. When the Software License Agreement screen of Windows PE appears, click [Yes].

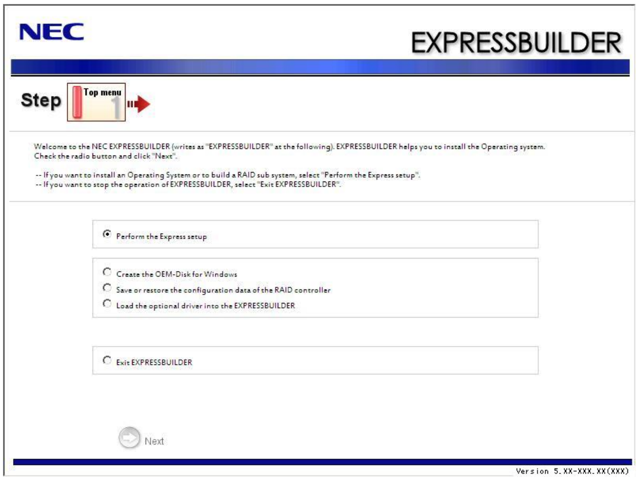


Confirm the following End-User License Agreement.
To use this software, agree this license.

```
END-USER LICENSE AGREEMENT FOR MICROSOFT® WINDOWS® PREINSTALLATION ENVIRONMENT
IMPORTANT-READ CAREFULLY:

 This End-User License Agreement ( “EULA” ) is a legal agreement between you (either
an individual or a single entity) and the manufacturer ( “Manufacturer” ) of the
special purpose computing device or software ( “SYSTEM” ) you acquired which
includes certain Microsoft software product(s) installed on or for use with the
SYSTEM ( “SOFTWARE” ).
The SOFTWARE includes computer software, and may include associated media, printed
materials, and  “online”  or electronic documentation.
Any software provided along with the SOFTWARE that is associated with a separate end-
user license agreement or separate terms of use is licensed to you under the terms
of that license agreement or terms of use rather than this EULA.
 By installing, copying, downloading, accessing or otherwise using the SOFTWARE, you
agree to be bound by the terms of this EULA.
If you do not agree to the terms of this EULA, Manufacturer and Microsoft Licensing,
GP ( “MS” ) are unwilling to license the SOFTWARE to you.
In such event, you may not use or copy the SOFTWARE, and you should promptly contact
Manufacturer for instructions on return of the unused product(s) for a refund in
```

6. Select [Perform the Express setup] from the Top Menu, click [Next].



Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

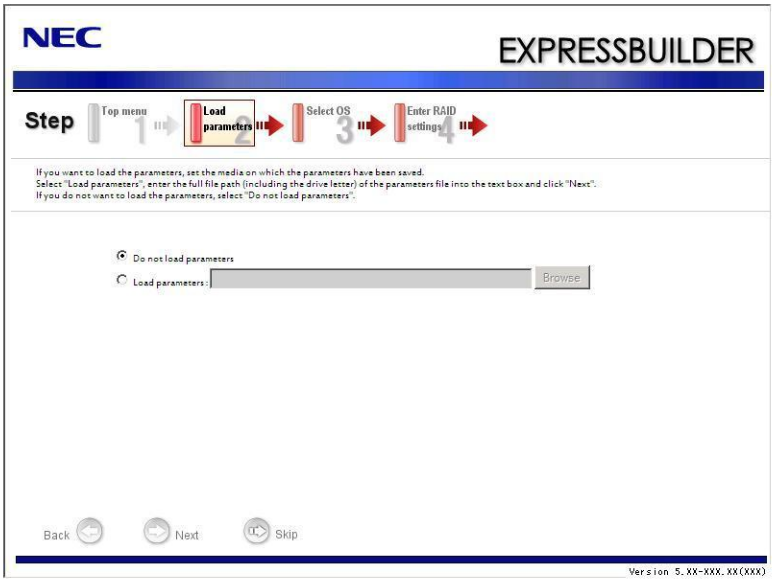
● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

Version 5.XX-XXX.XX(XXX)

7. [Load parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Browse
Back
Next
Skip
Version 5.XX-XXX.XX(XXX)

If you want to load the parameters, set the media on which the parameters have been saved.
Select "Load parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to load the parameters, select "Do not load parameters".

● Do not load parameters
○ Load parameters:

[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

> **IMPORTANT:** The setup using a parameter file saved in the Flash FDD is not supported.

> **NOTE:** If a floppy disk drive is not connected, select this item.

[Load parameters]

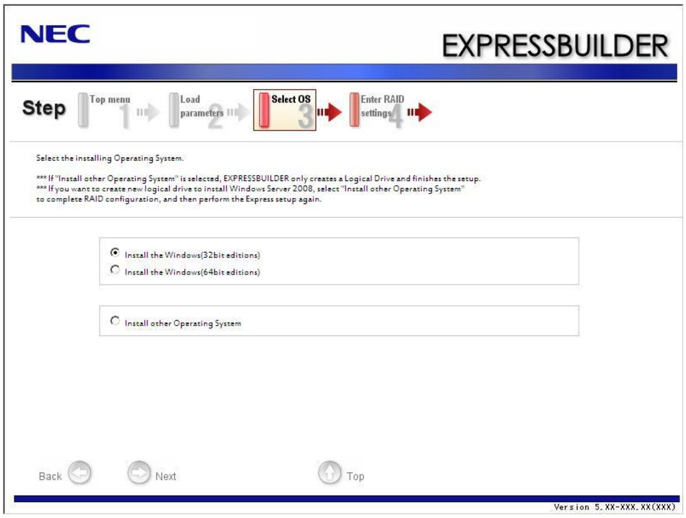
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

8. Select the installing Operating System.

Select [Install the Windows (32bit editions)] or [Install the Windows (64bit editions)] from the menu, click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

Select the installing Operating System.

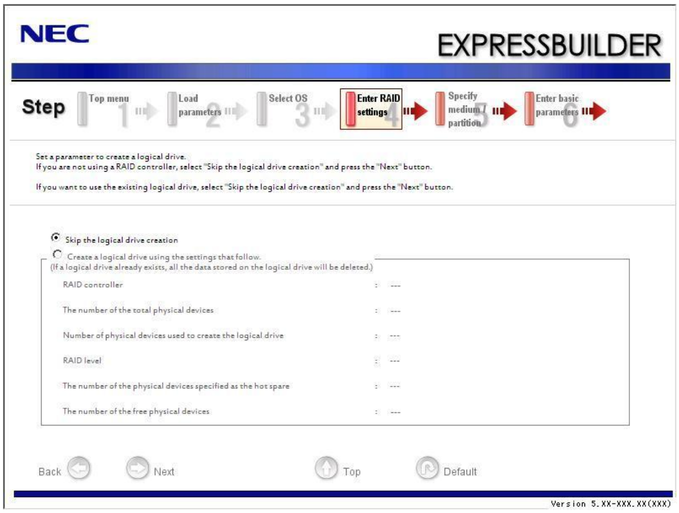
*** If "Install other Operating System" is selected, EXPRESSBUILDER only creates a Logical Drive and finishes the setup.
*** If you want to create new logical drive to install Windows Server 2008, select "Install other Operating System"
to complete RAID configuration, and then perform the Express setup again.

● Install the Windows(32bit editions)
○ Install the Windows(64bit editions)

○ Install other Operating System

9. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.

If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.

● Skip the logical drive creation
○ Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)

RAID controller : ---
The number of the total physical devices : ---
Number of physical devices used to create the logical drive : ---
RAID level : ---
The number of the physical devices specified as the hot spare : ---
The number of the free physical devices : ---

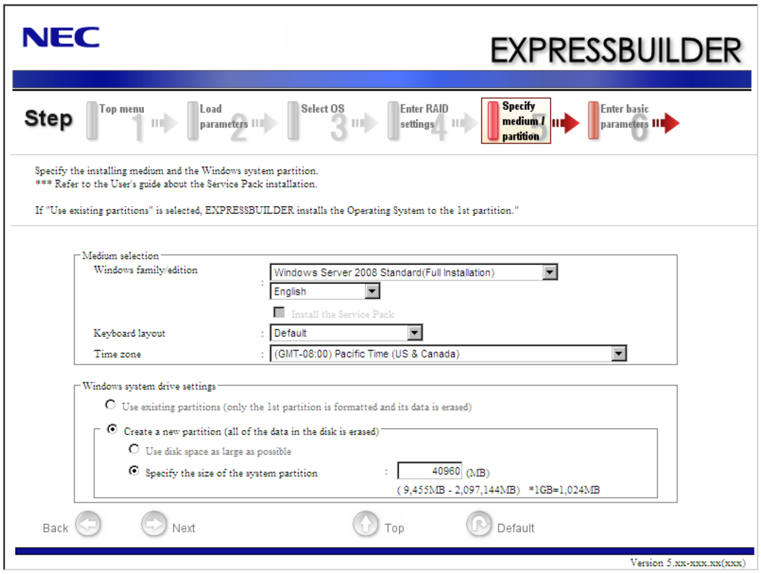
NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

---

10. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6
Back
Next
Top
Default

Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition."

Medium selection
Windows family/edition : Windows Server 2008 Standard(Full Installation)
English
☐ Install the Service Pack
Keyboard layout : Default
Time zone : (GMT-08:00) Pacific Time (US & Canada)

Windows system drive settings
○ Use existing partitions (only the 1st partition is formatted and its data is erased)
● Create a new partition (all of the data in the disk is erased)
○ Use disk space as large as possible
● Specify the size of the system partition : 40960 (MB)
(9,455MB - 2,097,144MB) *1GB=1,024MB

Version 5.xx-xxx.xx(xxx)

IMPORTANT:

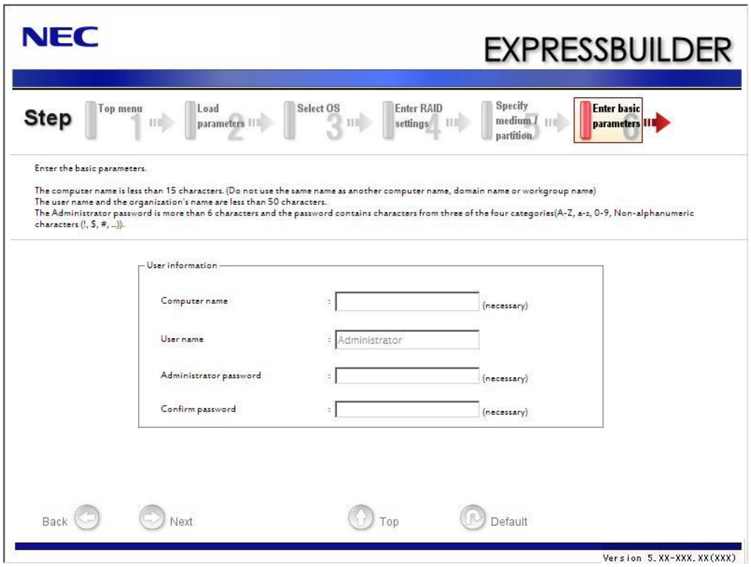
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

- You cannot re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

11. Enter the user information.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6
User information
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

Enter the basic parameters.

The computer name is less than 15 characters. (Do not use the same name as another computer name, domain name or workgroup name)
The user name and the organization's name are less than 50 characters.
The Administrator password is more than 6 characters and the password contains characters from three of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, $, #, ...)).

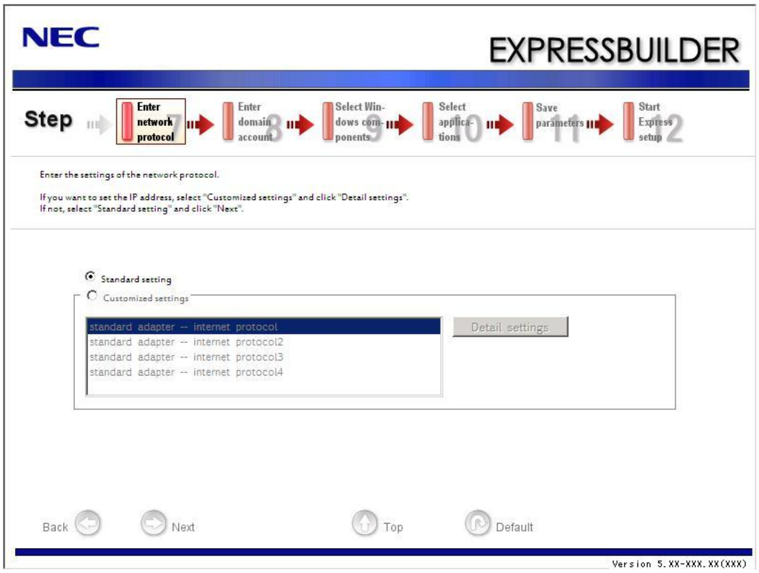
Computer name : (necessary)
User name : Administrator
Administrator password : (necessary)
Confirm password : (necessary)

IMPORTANT: Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

12. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol
Enter domain account
Select Windows components
Select applications
Save parameters
Start Express setup
Back
Next
Top
Default
Detail settings

Enter the settings of the network protocol.

If you want to set the IP address, select "Customized settings" and click "Detail settings".
If not, select "Standard setting" and click "Next".

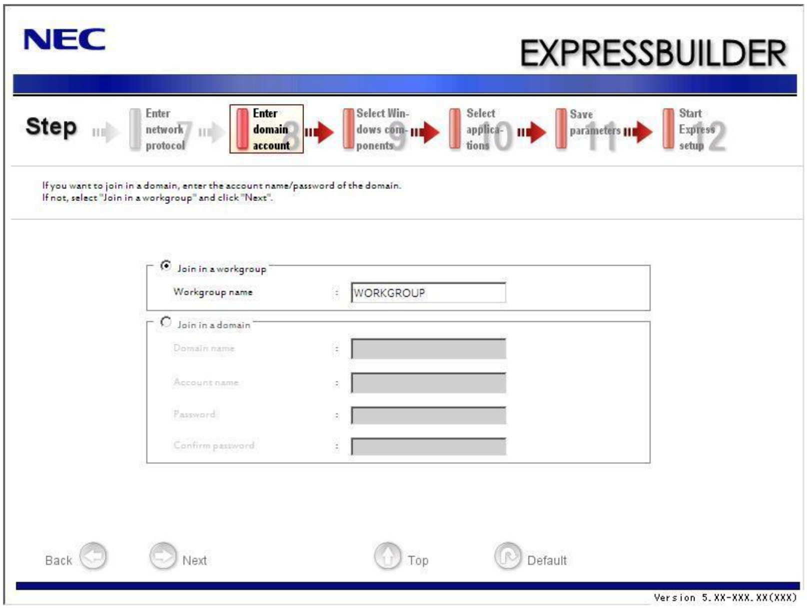
● Standard setting
○ Customized settings

standard adapter -- internet protocol
standard adapter -- internet protocol2
standard adapter -- internet protocol3
standard adapter -- internet protocol4

Version 5.XX-XXX.XX(XXX)

13. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol
Enter domain account
Select Windows components
Select applications
Save parameters
Start Express setup
Back
Next
Top
Default

If you want to join in a domain, enter the account name/password of the domain.
If not, select "Join in a workgroup" and click "Next".

● Join in a workgroup
Workgroup name : WORKGROUP

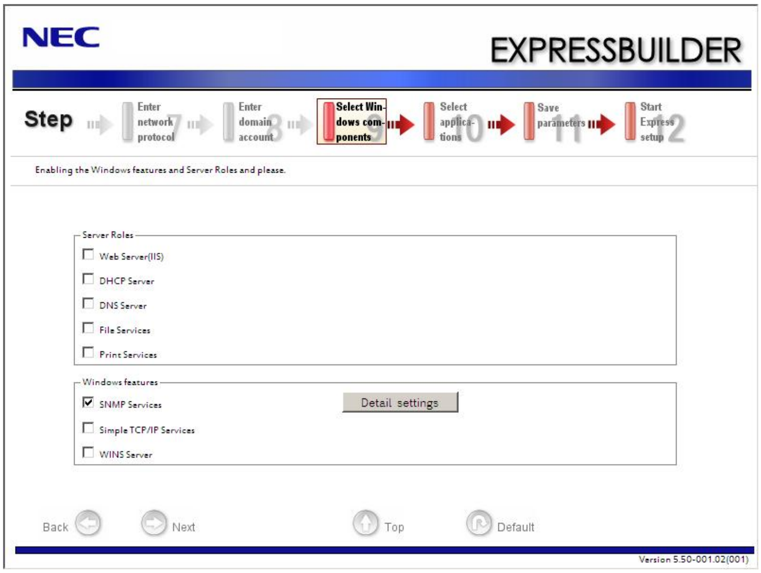
○ Join in a domain
Domain name :
Account name :
Password :
Confirm password :

Version 5.XX-XXX.XX(XXX)

14. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

<Full Installation>


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Back
Next
Top
Default
Version 5.50-001.02(001)

Enabling the Windows features and Server Roles and please.

Server Roles

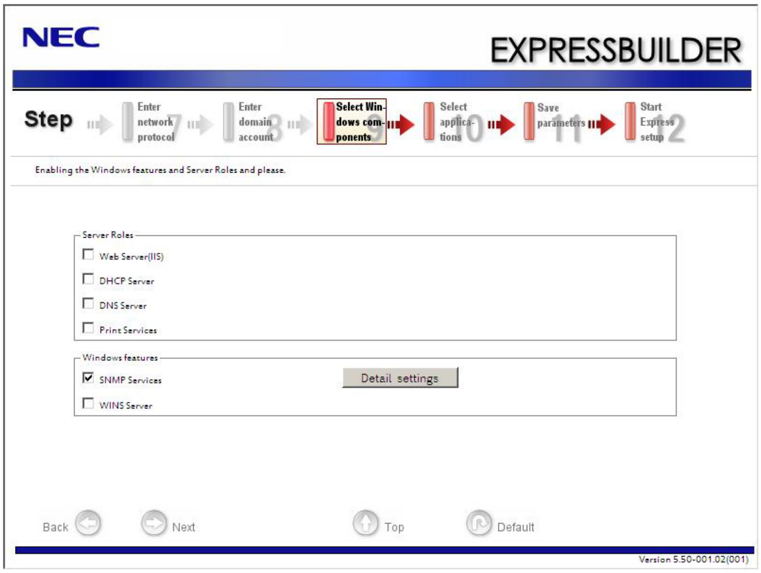
☐ Web Server(IIS)
☐ DHCP Server
☐ DNS Server
☐ File Services
☐ Print Services

Windows features

☑ SNMP Services
☐ Simple TCP/IP Services
☐ WINS Server

Detail settings

<ServerCore Installation>


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Back
Next
Top
Default
Version 5.50-001.02(001)

Enabling the Windows features and Server Roles and please.

Server Roles

☐ Web Server(IIS)
☐ DHCP Server
☐ DNS Server
☐ Print Services

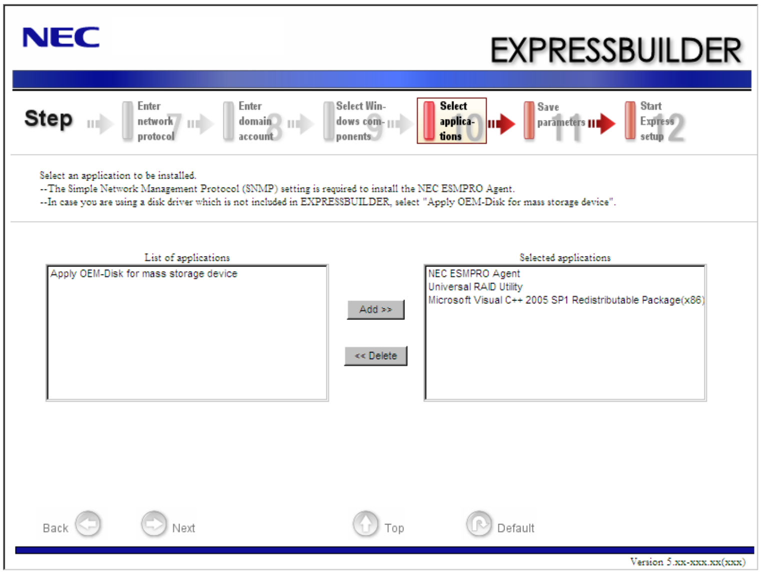
Windows features

☑ SNMP Services
☐ WINS Server

Detail settings

15. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Add >>
<< Delete
Back
Next
Top
Default
Version 5.xx-xxx.xx(xxx)

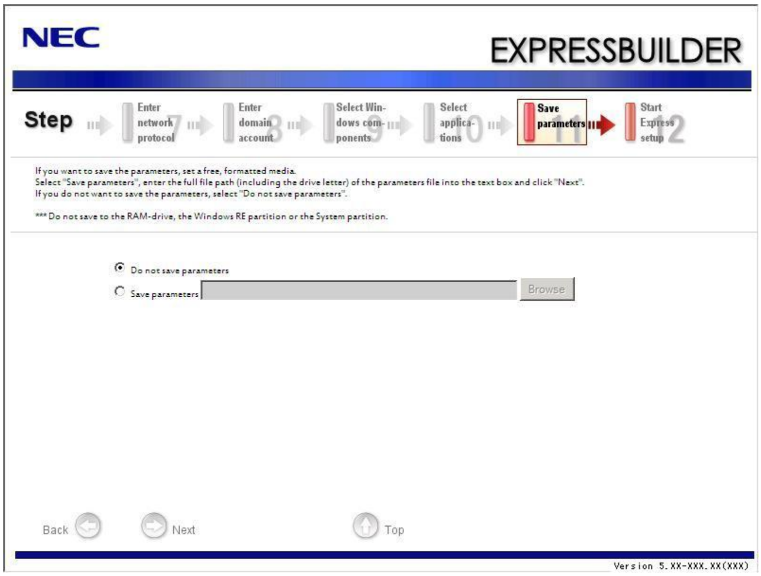
Select an application to be installed.
--The Simple Network Management Protocol (SNMP) setting is required to install the NEC ESMPRO Agent.
--In case you are using a disk driver which is not included in EXPRESSBUILDER, select "Apply OEM-Disk for mass storage device".

List of applications
Apply OEM-Disk for mass storage device

Selected applications
NEC ESMPRO Agent
Universal RAID Utility
Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)

16. Save the parameters.

[Save parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Browse
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

If you want to save the parameters, set a free, formatted media.
Select "Save parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to save the parameters, select "Do not save parameters".

*** Do not save to the RAM-drive, the Windows RE partition or the System partition.

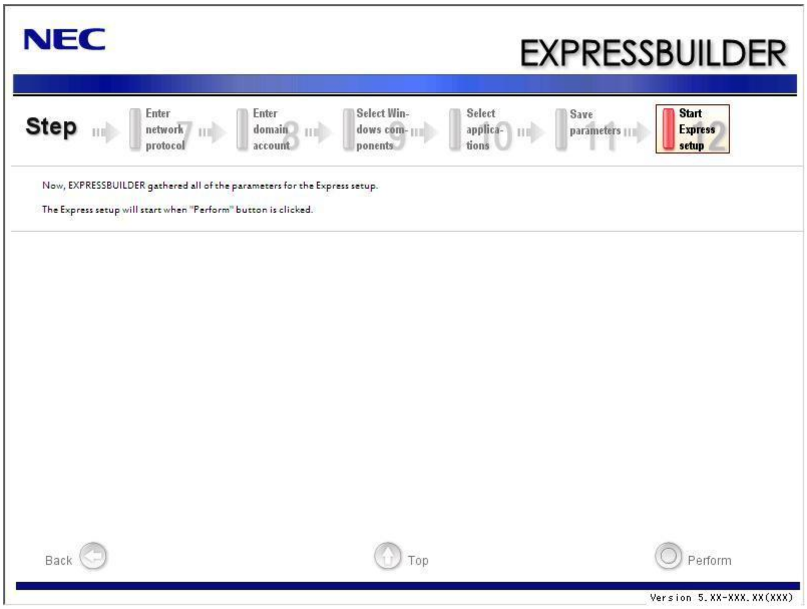
● Do not save parameters
○ Save parameters

If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

17. The Express Setup will start when you click [Perform] in [Start Express setup] step.


NEC
EXPRESSBUILDER
Step
Enter network protocol
7
Enter domain account
8
Select Windows components
9
Select applications
10
Save parameters
11
Start Express setup
12
Back
Top
Perform
Version 5.XX-XXX.XX(XXX)

Now, EXPRESSBUILDER gathered all of the parameters for the Express setup.

The Express setup will start when "Perform" button is clicked.

18. Remove NEC EXPRESSBUILDER DVD-ROM from the optical disk drive according to the message.

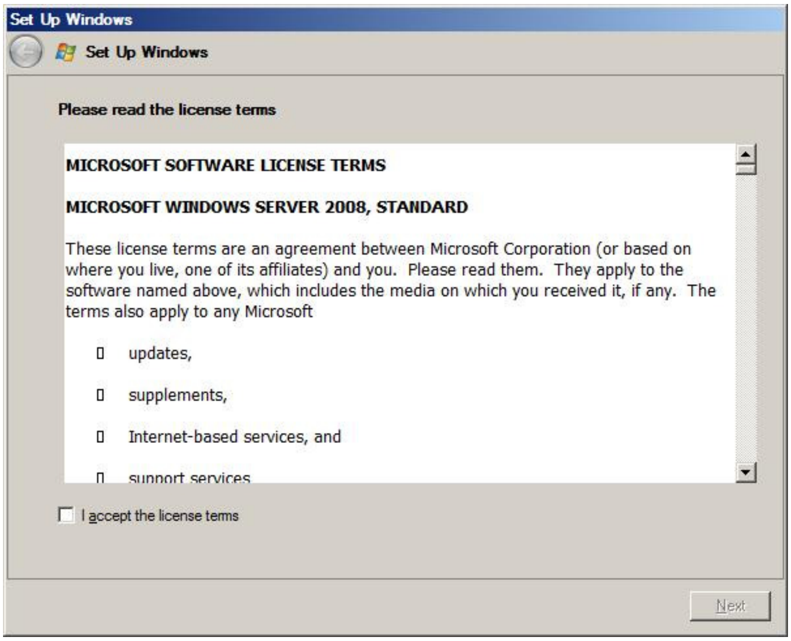
If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

19. Insert Windows Server 2008 DVD-ROM into the optical disk drive.

NOTE: Windows Server 2008 and selected applications will be installed automatically and reboots several times.

20. [Agree Software License Agreement] screen appears.

Read the license terms carefully. If you agree, select I accept the license terms, and then click [Next].



Please read the license terms

MICROSOFT SOFTWARE LICENSE TERMS

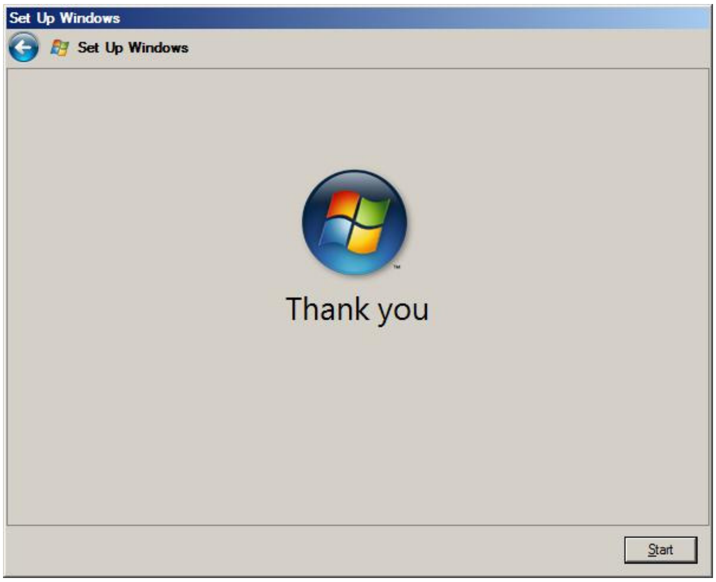
MICROSOFT WINDOWS SERVER 2008, STANDARD

These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft

- updates,
- supplements,
- Internet-based services, and
- support services

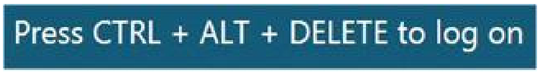
☐ I accept the license terms

21. When the following message appears, click [Start].



Thank you

22. When the following message appears, press **Ctrl** + **Alt** + **Del**.

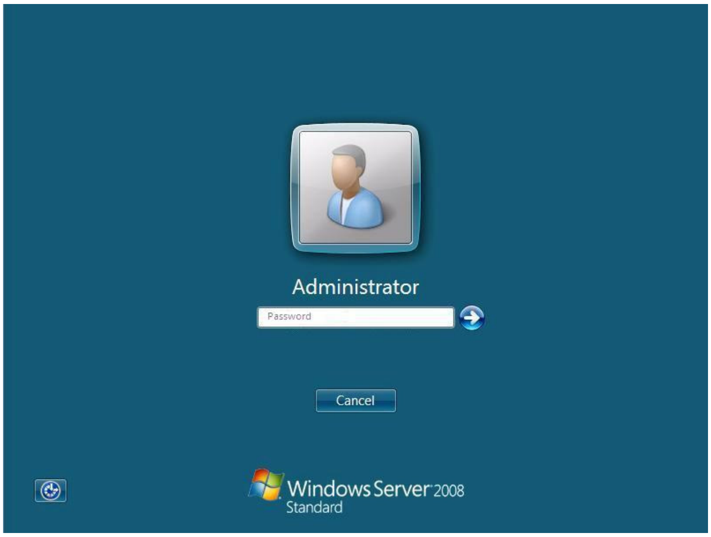


Press CTRL + ALT + DELETE to log on

23. Log on to the system.

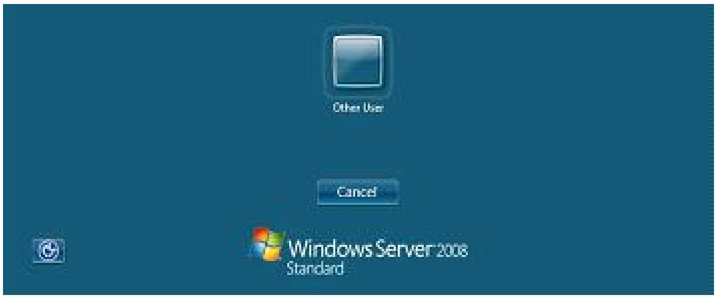
<Full Installation>

When the following screen appears, enter your password into "Password", and click .

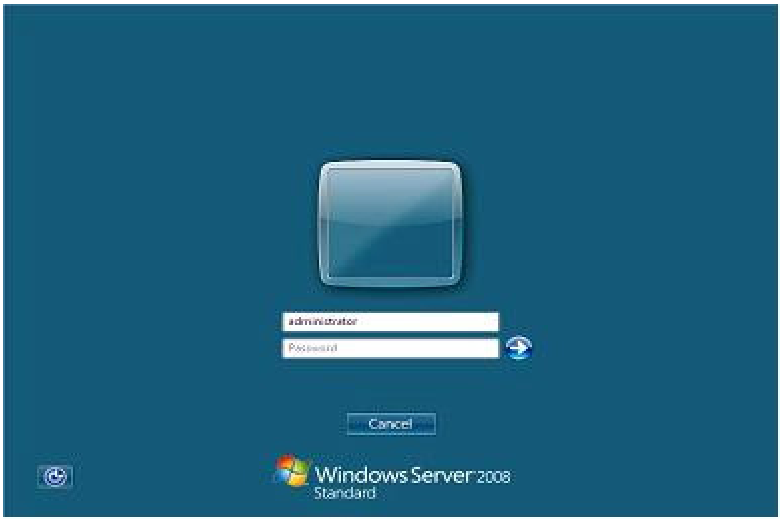

Administrator
Password
Cancel
Windows Server 2008
Standard

<Server Core Installation>

When the following screen appears, click "Other User".


Other User
Cancel
Windows Server 2008
Standard

In the following screen, enter "Administrator" into [UserName], your password into "Password", and click ➔.



administrator

Password
Cancel
Windows Server 2008
Standard

Hereinafter, proceed operations according to the message.

Now the Setup using Express Setup has completed.

After Express Setup has completed, be sure to execute the tasks described in "Installing and Setting Device Drivers".

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

NOTES:

- To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.
- [Internet Protocol (TCP/IP)] check-box is necessary checked to set an IP Addresses. According to the circumstances, the check-box is not checked from begin. Manually checked the check box and set an IP addresses.

Using N8104-125A Adapter after System Update

To use the N8104-125A Adapter after updating your system, you must first uninstall the LAN driver and PROSet, and then update your system with the N8104-125A Adapter connected.

■ For a server running a full installation

1. Remove a team of network adapters.

NOTES:

- Before you remove, note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy.
- Configure the settings after reinstalling the LAN driver and PROSet.
- To remove the team, see "Setup Team".

2. In [Control Panel], click [Uninstall Program].
3. Double-click [Intel(R) Network Connections 14.8.43.0].

   [Intel(R) Network Connections (Remove Options)] appears.
4. In [Remove Options], click [Remove].

   [Intel(R) Network Connections - Remove Software] appears.

5. Select [Yes].

   The uninstallation starts automatically.

6. When [InstallShield Wizard Completed] appears. Click [Finish].
7. Restart the system.

■ For a server running a Server Core installation

1. Note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy before uninstalling LAN driver.

   Configure the settings after reinstalling the LAN driver.

2. At a command prompt, run dxsetup.exe in your removable medium containing the Driver Set.
   - Windows Server 2008 64-bit (x64) Editions:

     <drive letter>:\017\win\winnt\ws2008x64\r148\apps\prosetdx\vistax64\dxsetup.exe

   - Windows Server 2008 32-bit (x86) Editions:

     <drive letter>:\017\win\winnt\ws2008\r148\apps\prosetdx\vista32\dxsetup.exe

3. In [Intel(R) Network Connections - InstallShield Wizard], click [Next].
4. Select [Remove], and click [Next].
5. Click [Remove].

   Uninstallation starts automatically.

6. When [InstallShield Wizard Completed] appears, click [Finish].
7. Restart the system.

LAN Driver Setting

■ Link Speed

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

■ WOL

Refer to the following procedure for WOL(Wake On LAN) setting.

1. Start Device Manager.
2. Point to [Network adapters] and double click following adapter.

   Open the adapter [Properties].

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection]

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection #2]
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	**Using WOL**	**Not using WOL**
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

IMPORTANT: WOL do not work by DirectedPacket (* 1) on shutdown state even "Wake On Directed Packet" is "ON". (WOL work by DirectedPacket on sleep and hibernate state.)

*1 The packet which includes ethernet address of adapter in Ethernet Header or the Packet including the IP address assigned by IP Header to adapter.

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

4. Click [OK].
5. Restart the system.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

Setup Team

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols. SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing(ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
- Confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
- Teaming is not supported with Windows Server Core.
- If you want to change the type of a teaming, be sure to remove the teaming first, then re-setup a new teaming. Do not use the function of PROSet to change the type of a teaming.

■ Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].
6. Select a team mode, and then click [Next].

   IMPORTANT: Following team types are supported.

   - Adapter Fault Tolerance
   - Adaptive Load Balancing
   - Static Link Aggregation
   - Switch Fault Tolerance

7. Click [Finish].
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team.

   Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.

   – Set Primary

   Point the adapter and click [Set Primary] button.

   – Set Secondary

   Point the adapter and click [Set Secondary] button.

   NOTE: Adapter priority config can be confirmed by the following procedure:

   1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
   2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

    Confirm the result in [Test results]
11. Restart the system.

■ Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and restart the system.

LAN Board Driver (N8104-112/119/120/121/122/125A/126)

The following LAN Boards are available for the N8104-112/119/120/121/122/125A/126.

To use the N8104-125A Adapter, see" Using N8104-125A Adapter after System Update" in the previous page.

The drivers for other LAN Boards are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Refer to "Graphics Accelerator Driver" described in Appendix E when you want to reinstall the driver individually.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing Fibre Channel Controller Driver (N8190-127/131/153/154)

If you use the Fibre Channel Controller N8190-127/131/153/154, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

> **IMPORTANT:** "PAE option" is not supported on Windows Server 2008 Standard.

In Windows Server 2008 system, the PAE option can be set by using Bcdedit.exe.

The setting procedure is as follows.

1. Click [Run] on [Start] menu.
2. Type "cmd.exe" in the [Open:] box to start command prompt.
3. Execute following command line.

   ```
   bcdedit /set pae forceenable
   ```
4. Reboot the system.

   The setting mentioned above enables after reboot.
5. Execute following command line on command prompt.

   ```
   bcdedit
   ```

   Confirm "pae ForceEnable" exists in "Windows boot loader".

The setting for PAE option is now completed.

Refer following site about Bcdedit.exe.

"Boot Configuration Data Editor Frequently Asked Questions"

http://technet.microsoft.com/en-us/library/cc721886(WS.10).aspx

Setting for Solving Problems

Setup your computer in advance so that it can recover from any trouble precisely and as soon as possible when it should occur.

For more information, see Page 5-88.

Windows Server 2003

This section explains how to install Microsoft® Windows Server® 2003 by using the Express Setup.

NOTES:

- Express Setup does not support the installation of Windows Server 2003 x64 Editions. If you want to install it, see Appendix F.
- If you install Windows Server 2003 without using Express Setup, see Appendix G.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows family

This computer supports the following Windows editions:

- Microsoft® Windows Server® 2003 R2 Standard Edition / Microsoft® Windows Server® 2003 R2 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")

NOTE: Express Setup does not support the installation of Windows Server 2003 x64 Editions. If you want to install it, see Appendix F.

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2003.

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD-ROM attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD-ROM attached to your system supports the following mass storage controllers for installation.

NOTE: If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID controller (256MB, RAID 0/1)*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*

* Option

NOTES:

- The driver of option card mentioned above is stored in the NEC EXPRESSBUILDER DVD-ROM.
- If you use the board not mentioned above, the Express Setup will fail. Refer to the instructions attached to the board.

About the Hardware Components

When you install the Windows Server 2003, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

If you want to install the Windows Server 2003 on the volume that is mirrored using "Disk Management", invalidate the mirroring and set back to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate or delete the mirror volume by using "Disk Management" in "Computer Management".

Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create the Windows system drive.

If you create multiple logical drives in your system, see "Re-installing the Operation System if Multiple Logical Drives Exist" (5-100).

Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2003 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix G to re-install the system.

Peripheral Devices such as RDX

Depending on your hardware configuration, some peripheral devices need to be removed or disabled before starting setup. Refer to the instruction manual which came with the peripheral device for pertinent information, and proceed accordingly.

About the System Partition Size

The system partition size can be calculated from the following formula.

Required partition size
= Size necessary to install the system + Paging File Size + Dump File Size + Application Size

Size necessary to install the system = 3500MB (Windows Server 2003 R2)
= 3500MB (Windows Server 2003 R2 with Service Pack 2)
= 5300MB (Windows Server 2003 R2 + Service Pack 2 CD-ROM)
Paging File Size (Recommended) = Mounted Memory Size * 1.5
Dump File Size = Mounted Memory Size + 12MB
Application Size = Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 1GB (1,024MB), the partition size will be calculated by the above formula as follows:

3,500MB + (1,024MB * 1.5) + (1,024MB + 12MB) + Application Size
= 6,072MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

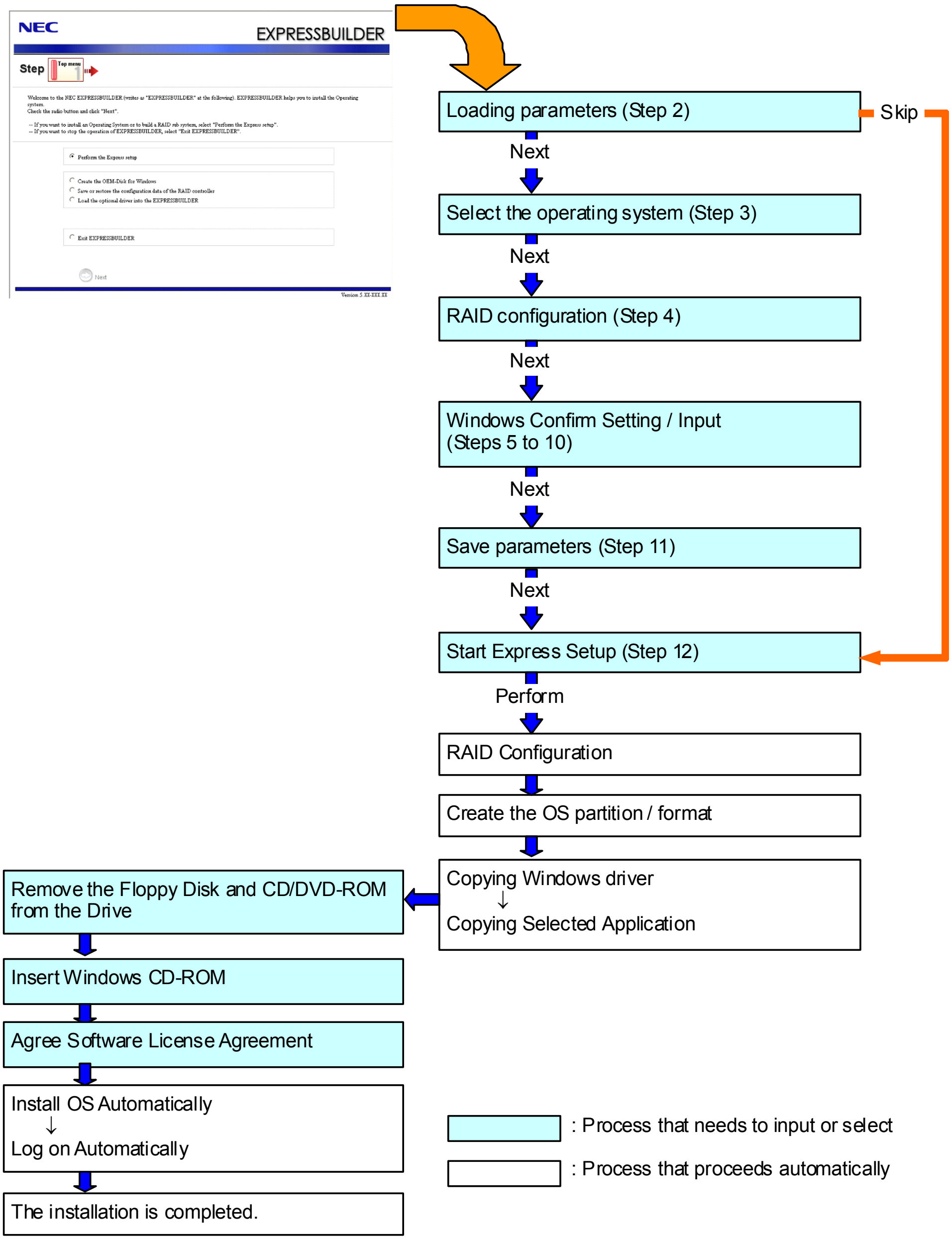
   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

Installing the Service Pack

When installing Windows Server 2003 R2, it is not necessary to install the Service Pack 1.

FLOW OF SETUP

This section visually describes the flow of the setup operated by Express Setup.



Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

NEC
EXPRESSBUILDER
Step
Top menu
1
Next
Version 5.XX-XXX.XX
Loading parameters (Step 2)
Skip
Next
Select the operating system (Step 3)
Next
RAID configuration (Step 4)
Next
Windows Confirm Setting / Input (Steps 5 to 10)
Next
Save parameters (Step 11)
Next
Start Express Setup (Step 12)
Perform
RAID Configuration
Create the OS partition / format
Copying Windows driver
↓
Copying Selected Application
Remove the Floppy Disk and CD/DVD-ROM from the Drive
Insert Windows CD-ROM
Agree Software License Agreement
Install OS Automatically
↓
Log on Automatically
The installation is completed.
: Process that needs to input or select
: Process that proceeds automatically

INSTALLING Windows Server 2003

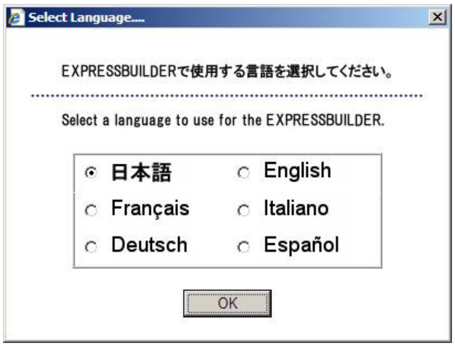
Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.

   Select "Os installation *** default ***" from the Boot selection menu. (If you do not hit any key, "Os installation" is selected automatically.)

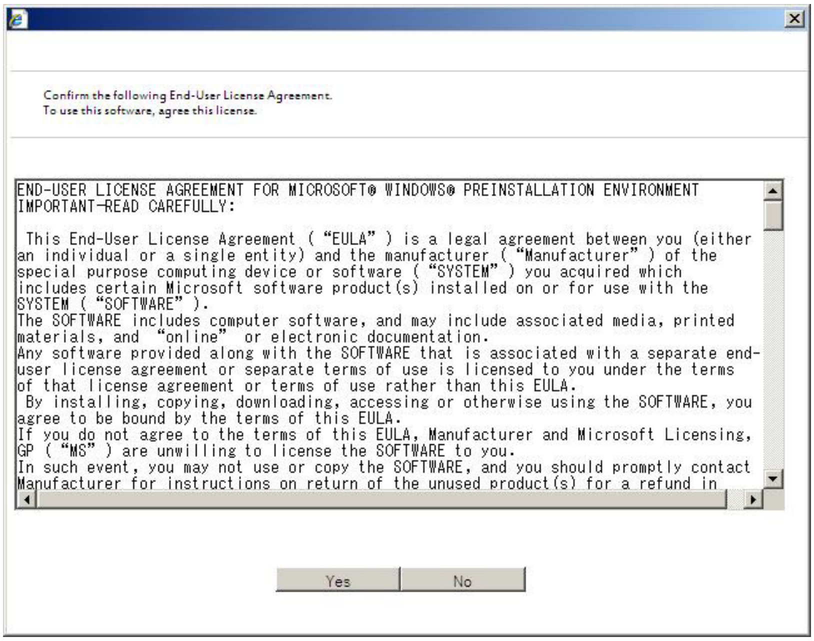
   The Top menu will appear.
4. Select [English] from the [Select Language], click [OK].



EXPRESSBUILDERで使用する言語を選択してください。

Select a language to use for the EXPRESSBUILDER.

5. When the Software License Agreement screen of Windows PE appears, click [Yes].

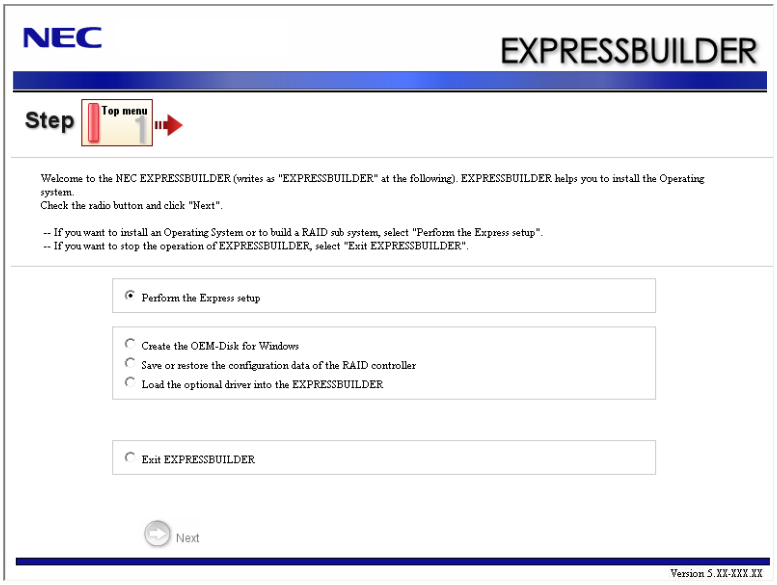


Confirm the following End-User License Agreement.
To use this software, agree this license.

END-USER LICENSE AGREEMENT FOR MICROSOFT® WINDOWS® PREINSTALLATION ENVIRONMENT
IMPORTANT-READ CAREFULLY:

This End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and the manufacturer ("Manufacturer") of the special purpose computing device or software ("SYSTEM") you acquired which includes certain Microsoft software product(s) installed on or for use with the SYSTEM ("SOFTWARE").
The SOFTWARE includes computer software, and may include associated media, printed materials, and "online" or electronic documentation.
Any software provided along with the SOFTWARE that is associated with a separate end-user license agreement or separate terms of use is licensed to you under the terms of that license agreement or terms of use rather than this EULA.
By installing, copying, downloading, accessing or otherwise using the SOFTWARE, you agree to be bound by the terms of this EULA.
If you do not agree to the terms of this EULA, Manufacturer and Microsoft Licensing, GP ("MS") are unwilling to license the SOFTWARE to you.
In such event, you may not use or copy the SOFTWARE, and you should promptly contact Manufacturer for instructions on return of the unused product(s) for a refund in

6. Select [Perform the Express setup] from the Top Menu, click [Next].



Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

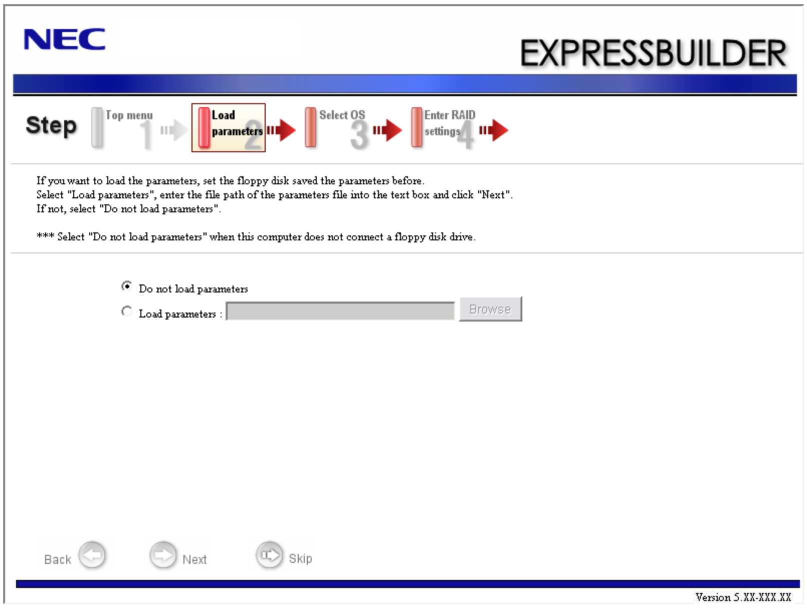
● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

Version 5.XX-XXX.XX

7. [Load parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Browse
Back
Next
Skip
Version 5.XX-XXX.XX

If you want to load the parameters, set the floppy disk saved the parameters before.
Select "Load parameters", enter the file path of the parameters file into the text box and click "Next".
If not, select "Do not load parameters".

*** Select "Do not load parameters" when this computer does not connect a floppy disk drive.

● Do not load parameters
○ Load parameters :

[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

IMPORTANT: The setup using a parameter file saved in the Flash FDD is not supported.

NOTE: If a floppy disk drive is not connected, select this item.

[Load parameters]

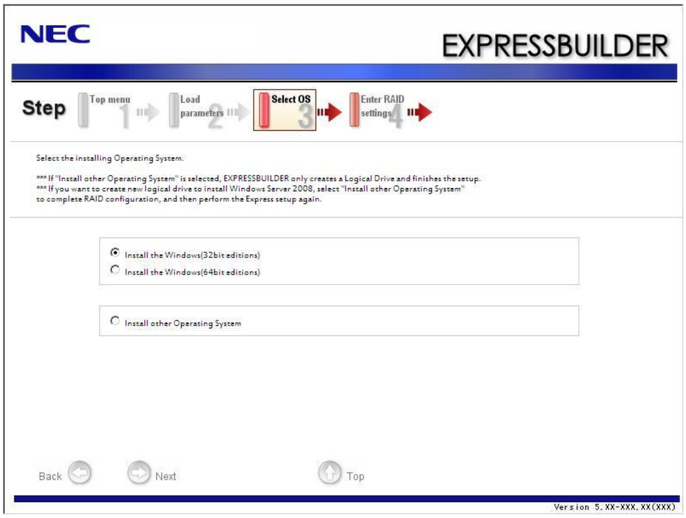
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

8. Select the installing Operating System.

   Select [Install the Windows (32bit editions)] from the menu, click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

Select the installing Operating System.

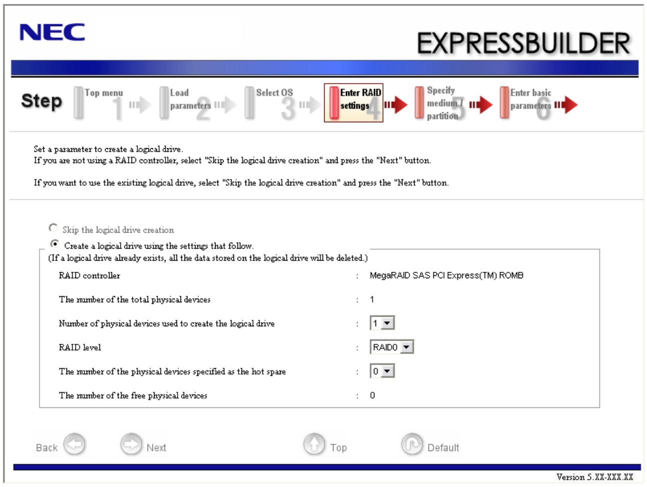
*** If "Install other Operating System" is selected, EXPRESSBUILDER only creates a Logical Drive and finishes the setup.
*** If you want to create new logical drive to install Windows Server 2008, select "Install other Operating System"
to complete RAID configuration, and then perform the Express setup again.

● Install the Windows(32bit editions)
○ Install the Windows(64bit editions)

○ Install other Operating System

9. Enter the setting of a logical drive.

   [Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6
Back
Next
Top
Default
Version 5.XX-XXX.XX

Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.

If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.

○ Skip the logical drive creation
● Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)

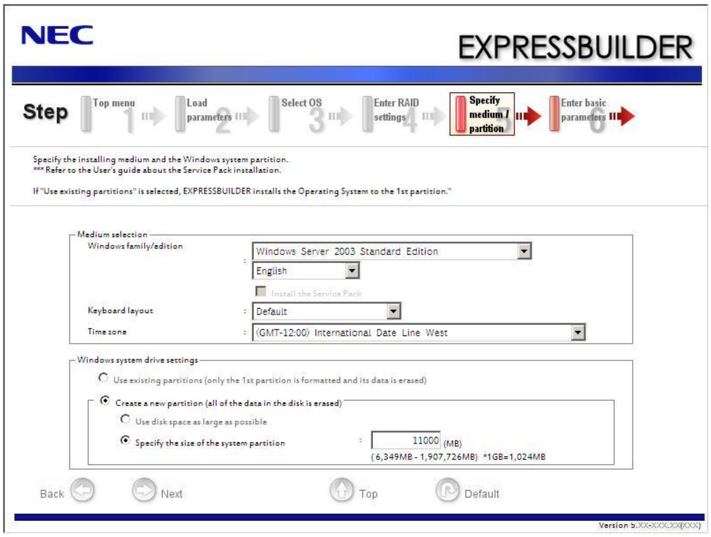
RAID controller : MegaRAID SAS PCI Express(TM) ROMB
The number of the total physical devices : 1
Number of physical devices used to create the logical drive : 1
RAID level : RAID0
The number of the physical devices specified as the hot spare : 0
The number of the free physical devices : 0

NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

10. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition."

Medium selection

Windows family/edition : Windows Server 2003 Standard Edition
English
☐ Install the Service Pack
Keyboard layout : Default
Time zone : (GMT-12:00) International Date Line West

Windows system drive settings

○ Use existing partitions (only the 1st partition is formatted and its data is erased)
● Create a new partition (all of the data in the disk is erased)
○ Use disk space as large as possible
● Specify the size of the system partition : 11000 (MB)
(6,349MB - 1,907,726MB) *1GB=1,024MB

IMPORTANT:

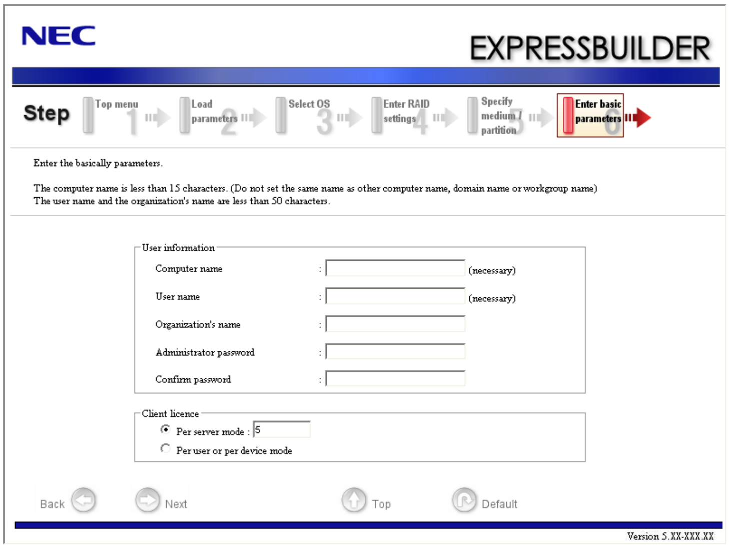
- If you install Windows Server 2003 R2 and Service Pack, apply Windows Server 2003 R2 DISC 2 after Express Setup completion, and then install Service Pack by "Updating the system".
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

- You cannot re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

11. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu 1
Load parameters 2
Select OS 3
Enter RAID settings 4
Specify medium / partition 5
Enter basic parameters 6

Enter the basically parameters.

The computer name is less than 15 characters. (Do not set the same name as other computer name, domain name or workgroup name)
The user name and the organization's name are less than 50 characters.

User information
Computer name : (necessary)
User name : (necessary)
Organization's name :
Administrator password :
Confirm password :

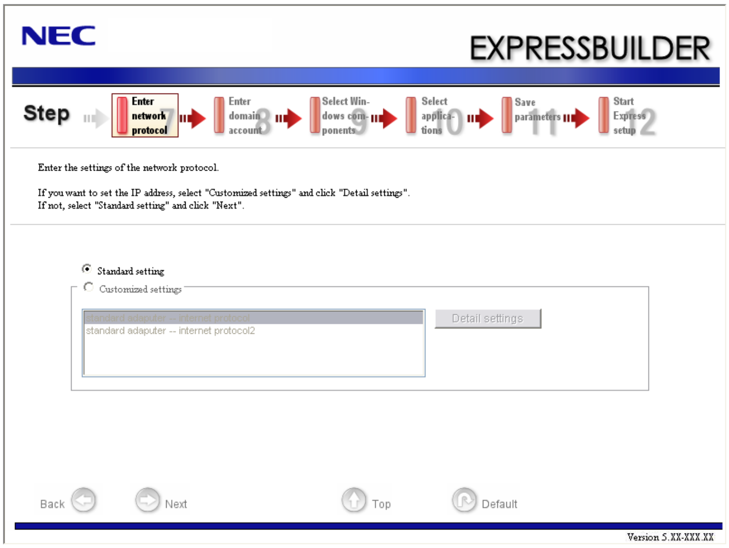
Client licence
● Per server mode : 5
○ Per user or per device mode

Back
Next
Top
Default
Version 5.XX-XXX.XX

NOTE: Even if you do not input value into "Administrator password", "Confirm password", "●●●●●" is displayed.

12. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12

Enter the settings of the network protocol.

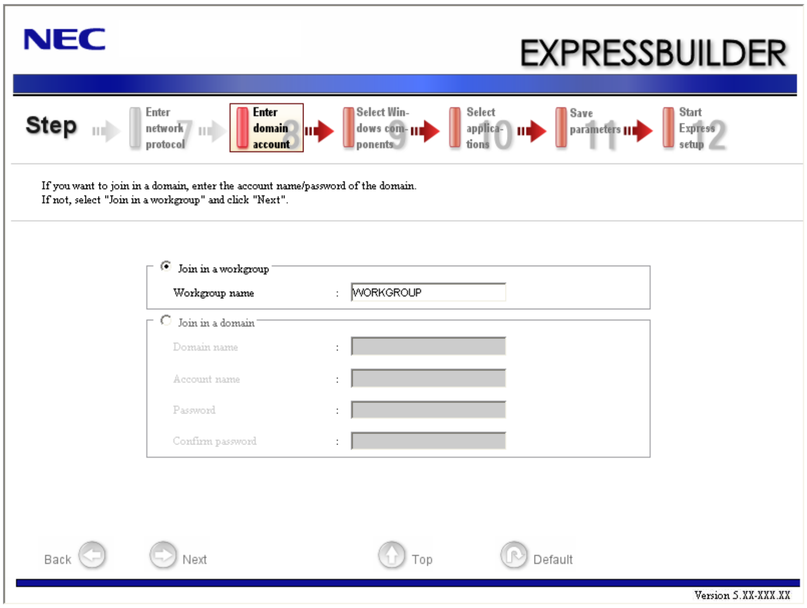
If you want to set the IP address, select "Customized settings" and click "Detail settings".
If not, select "Standard setting" and click "Next".

● Standard setting
○ Customized settings
standard adaputer -- internet protocol
standard adaputer -- internet protocol2

Detail settings
Back
Next
Top
Default
Version 5.XX-XXX.XX

13. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Back
Next
Top
Default
Version 5.XX-XXX.XX

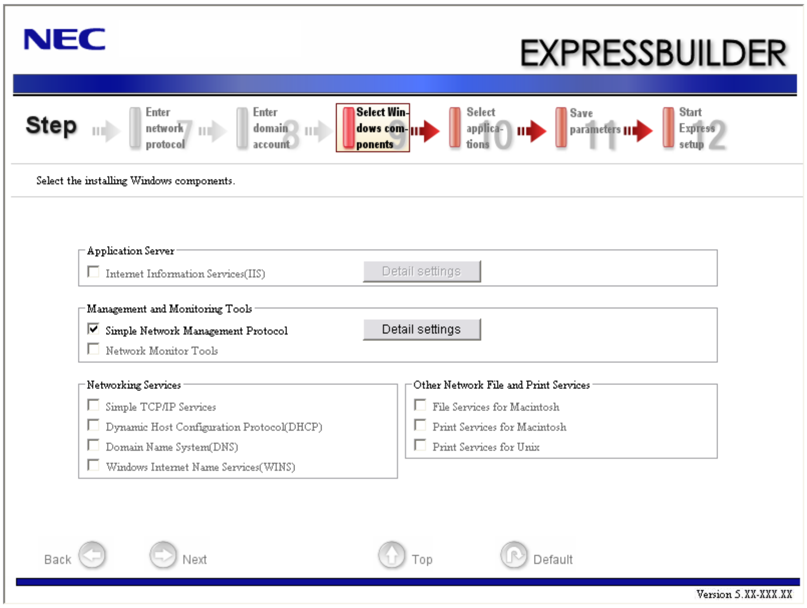
If you want to join in a domain, enter the account name/password of the domain.
If not, select "Join in a workgroup" and click "Next".

● Join in a workgroup
Workgroup name : WORKGROUP

○ Join in a domain
Domain name :
Account name :
Password :
Confirm password :

14. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Detail settings
Detail settings
Back
Next
Top
Default
Version 5.XX-XXX.XX

Select the installing Windows components.

Application Server
☐ Internet Information Services(IIS)

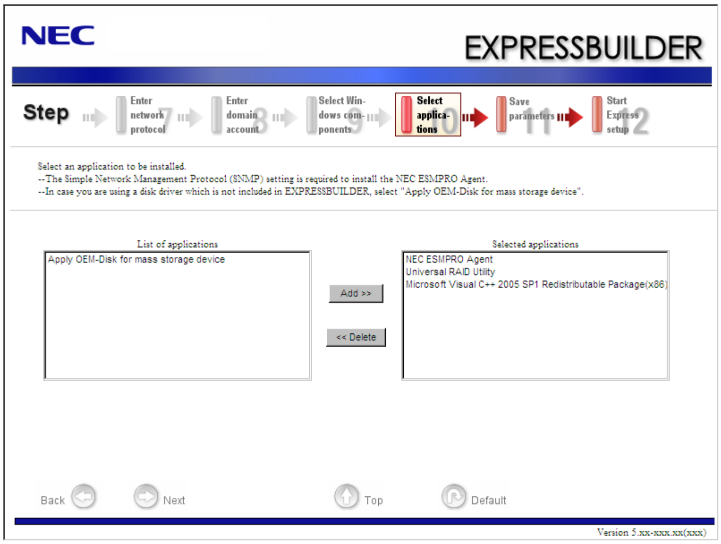
Management and Monitoring Tools
☑ Simple Network Management Protocol
☐ Network Monitor Tools

Networking Services
☐ Simple TCP/IP Services
☐ Dynamic Host Configuration Protocol(DHCP)
☐ Domain Name System(DNS)
☐ Windows Internet Name Services(WINS)

Other Network File and Print Services
☐ File Services for Macintosh
☐ Print Services for Macintosh
☐ Print Services for Unix

15. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Add >>
<< Delete
Back
Next
Top
Default

Select an application to be installed.
--The Simple Network Management Protocol (SNMP) setting is required to install the NEC ESMPRO Agent.
--In case you are using a disk driver which is not included in EXPRESSBUILDER, select "Apply OEM-Disk for mass storage device".

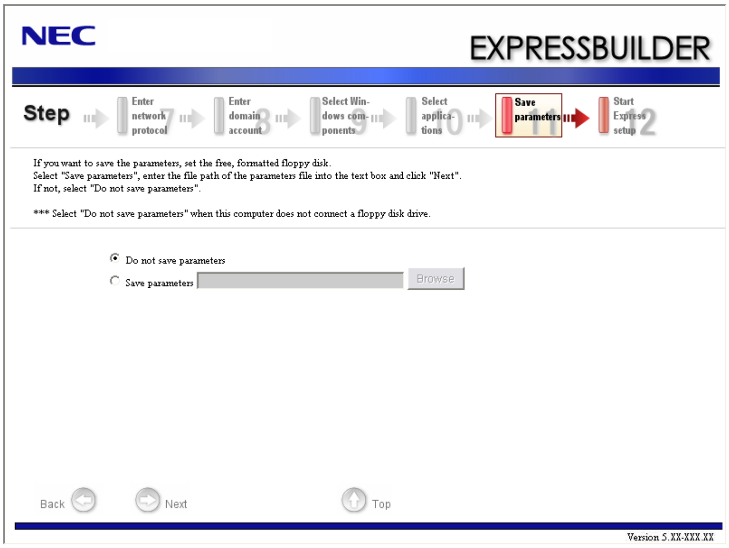
List of applications
Apply OEM-Disk for mass storage device

Selected applications
NEC ESMPRO Agent
Universal RAID Utility
Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)

Version 5.xx-xxx.xx(xxx)

16. Save the parameters.

[Save parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Browse
Back
Next
Top

If you want to save the parameters, set the free, formatted floppy disk.
Select "Save parameters", enter the file path of the parameters file into the text box and click "Next".
If not, select "Do not save parameters".

*** Select "Do not save parameters" when this computer does not connect a floppy disk drive.

● Do not save parameters
○ Save parameters

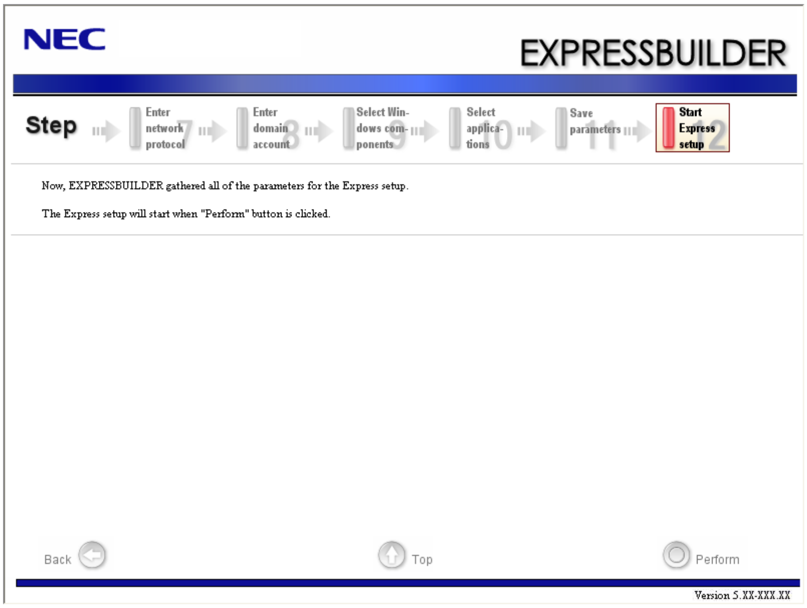
Version 5.XX-XXX.XX

If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

17. The Express Setup will start when you click [Perform] in [Start Express setup] step.



NEC
EXPRESSBUILDER
Step
Enter network protocol 7
Enter domain account 8
Select Windows components 9
Select applications 10
Save parameters 11
Start Express setup 12
Back
Top
Perform
Version 5.XX-XXX.XX

Now, EXPRESSBUILDER gathered all of the parameters for the Express setup.

The Express setup will start when "Perform" button is clicked.

18. Remove NEC EXPRESSBUILDER DVD-ROM from the optical disk drive according to the message.

If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

Insert Windows Server 2003 CD-ROM into the optical disk drive.

[Agree Software License Agreement] screen appears.

19. Read the contents carefully and click [Yes] if you do agree. If you do not agree, click [No].

IMPORTANT:

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.
- When the following message is displayed, click [OK] and input the product key.

```
The setup script file does not contain a valid Product ID.
Contact your system administrator for a valid Product ID.
```

---

20. Insert Microsoft Windows Server 2003 R2 DISC 2 into the optical disk drive after the OS installation.

Hereinafter, proceed operations according to the message.

When the installation has finished, remove Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 from the optical disk drive, and restart the system.

Now the Setup using Express Setup has completed.

INSTALLING AND SETTING DEVICE DRIVERS

Follow these steps to install and configure the device drivers.

LAN Driver and PROSet

LAN Driver

LAN drivers will be installed automatically.

PROSet

NOTE: All of the operation that related to IntelR PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.

Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog.

Click [OK] button will cause temporary loss of network connectivity.

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

   Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

   Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \017\win\winnt\dotnet\r148\apps\prosetdx\win32

   The [Intel(R) PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finished].
9. Remove the NEC EXPRESSBUILDER DVD-ROM from the optical disk drive, restart the system.

LAN Driver Setting

■ Link Speed

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

When PROSet is not installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

When PROSet is installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

■ WOL

Refer to the following procedure for WOL(Wake On LAN) setting.

When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click following adapter.

   Open the adapter [Properties].

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection]

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection #2]
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Using WOL	Not using WOL
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	ON or OFF	OFF

IMPORTANT:

- ■ Set "Allow this device to bring..." "ON", WOL by Directed Packet(*1) or Magic Packet will available on Standby and Hibernate state.
- ■ WOL by Directed Packet is not available on Shutdown state.

*1 Packet with the Ethernet address of the adapter in Ethernet header or Packet with an IP address assigned to the adapter in IP header.

---

4. Click [Advanced] tab and point to [Enable PME].
5. Set in [Value] as follows.
   - Using WOL : ON
   - Not using WOL: OFF
6. Click [OK].
7. Restart the system.

When PROSet is installed

1. Start Device Manager.
2. Point to [Network adapters] and double click following adapter.

   Open the adapter [Properties].

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection]

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection #2]
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Using WOL	Not using WOL
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

IMPORTANT: WOL do not work by DirectedPacket (* 1) on shutdown state even "Wake On Directed Packet" is "ON".(WOL work by DirectedPacket on sleep and hibernate state.)

*1 Packet with the Ethernet address of the adapter in Ethernet header or Packet with an IP address assigned to the adapter in IP header.

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

4. Click [OK].
5. Restart the system.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

Setup Team

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing(ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
- Confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
- Teaming is not supported with Windows Server Core.
- If you want to change the type of a teaming, be sure to remove the teaming first, then re-setup a new teaming. Do not use the function of PROSet to change the type of a teaming.

Create Team

1. Open the [Device Manager].

2. Open [Network adapters] → [Intel(R) xxx] properties.

3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

Click [New Team].

4. Fill the name of the team in [Specify a name for the team] and click [Next].

5. Include the adapter to the team and click [Next].

6. Select a team mode, and then click [Next].

> **IMPORTANT:** Following team types are supported.
>
> - Adapter Fault Tolerance
> - Adaptive Load Balancing
> - Static Link Aggregation
> - Switch Fault Tolerance

7. Click [Finish].

8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team.

Click [Settings] tab and click [Modify Team] button.

9. Refer to the following procedure to set the team member adapter priority status.

– Set Primary

Point the adapter and click [Set Primary] button.

– Set Secondary

Point the adapter and click [Set Secondary] button.

> **NOTE:** Adapter priority config can be confirmed by the following procedure:
>
> 1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
> 2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

Confirm the result in [Test results]

11. Restart the system.

Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and restart the system.

LAN Board Driver(N8104-111/112/119/120/121/122/125A/126)

Install the driver stored in NEC EXPRESSBUILDER DVD.

Installation of LAN Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...].

   [Hardware Update Wizard] appears.

4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and uncheck the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-111)], specify [\017\win\winnt\dotnet\r148\pro100\win32\ndis5x].

   Then click [Next].

   When using [(N8104-112/119/120/121/122/125A/126)], specify [\017\win\winnt\dotnet\r148\pro1000\win32\ndis5x].

   Then click [Next].

7. Click [Finish].
8. Restart the system.

LAN Board Driver (N8104-123A)

To install the driver, refer to the installation manual provided with the board and according to the installation manual, use the driver stored in attached CD-ROM.

Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Refer to "Graphics Accelerator Driver" described in Appendix G when you want to reinstall the driver individually.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

The SCSI Controller driver will be installed automatically.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

The SAS Controller driver will be installed automatically.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

IMPORTANT:

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

Microsoft Knowledge Base - Article ID: 291988
"A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

In Windows Server 2003 system, the PAE option can be set by editing boot.ini.

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].

   [System Properties] dialog box will be shown.
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

```
<Example of Boot.ini file>
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003 "
/fastdetect
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003 ,
PAE" /fastdetect /PAE
C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console " /cmdcons
```

This is the end of editing Boot.ini file.

NOTE: If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

Setting for Solving Problems

Setup your computer in advance so that it can recover from any trouble precisely and as soon as possible when it should occur.

For more information, See Page 5-88.

SETTING FOR SOLVING PROBLEMS

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Memory Dump (Debug Information)

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occurs after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you re-start the system in such case, memory dump may not be stored correctly.

When the system is Windows Server 2008 R2

Follow the procedure below to specify.

1. Click Start and select [Control Panel].

   The [Control Panel] window appears.

2. Click [System and Security] and then select [System].

   NOTE: If [View by] is not set as [Category], start [System] from Control Panel directly.

   ---

3. Click [Advanced system settings].

   The [System Properties] dialog box appears.

4. Select [Advanced] tab.
5. Click [Settings] on the [Startup and Recovery] group box.
6. Modify [Dump file] in the [Write debugging information] group box, and click [OK].

   e.g. Write the debug information in D drive with the file name

   "MEMORY.DMP".

   D:\MEMORY.DMP

   IMPORTANT:

   - To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
   - Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB".
   - In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory.
     The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

   ---

7. Click [Settings] in the [Performance] group box.

   The [Performance Options] window appears.

8. Click [Advanced] tab on the [Performance Options] window.
9. Click [Change] on the [Virtual memory] group box.

10. Uncheck the [Automatically manage paging file size for all drives] box, and check [Custom size].

11. On the [Paging file size for each drive] box, specify as follows:

– A value larger than the recommended size shown in [Total paging file size for all drives] for [Initial size]
– A value larger than the [Initial size] for [Maximum size]

Then click [Set].

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump).
  The paging file with initial size large enough to store the dump file in the Windows Partition is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- For more information on "Recommended" value, see "About the System Partition Size" described earlier.
- In case the memory is expanded, re-specify the paging file to suit the new memory size.

---

12. Click [OK].

The message to restart the system may appear according to the modified specification.

In such case, follow the message to restart the system.

When the system is Windows Server 2008

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System] dialog box appears.

2. Click [Advanced system settings].

   The [System Properties] dialog box appears.

3. Select [Advanced] tab.

   Click [Settings] on the [Startup and Recovery] group box.

4. Modify [Dump file:] in the [Write debugging information] group box.

   e.g. Write the debug information in D drive with the file name "MEMORY.DMP".

   D:\MEMORY.DMP

IMPORTANT:

Windows Server 2008 64-bit (x64) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2008 32-bit (x86) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB"(In case the memory capacity is more than 2GB, a free area of "2048+300MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

5. Click [Settings] on the [Performance] group box.

   The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.
7. Click [Change] on the [Virtual memory] group box.
8. Uncheck the [Automatically manage paging file size for all drives] box, and check [Custom size].
9. On the [Paging file size for each drive] box, specify as follows:

   – A value larger than the recommended size shown in [Total paging file size for all drives] for [Initial size]
   – A value larger than the [Initial size] for [Maximum size]
   Then click [Set].

   IMPORTANT:

   - The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
     Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
   - For more information on "Recommended" value, see "About the System Partition Size" described earlier.
   - In case the memory is expanded, re-specify the paging file to suit the new memory size.

10. Click [OK].

    The message to restart the system may appear according to the modified specification.

    In such case, follow the message to restart the system.

When the system is Windows Server 2003

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System Properties] dialog box appears.

2. Select [Advanced] tab.
3. Click [Settings] on the [Startup and Recovery] group box.

IMPORTANT:

Windows Server 2003 x64 Editions

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 1MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2003

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB"(In case the memory capacity is more than 2GB, a free area of "2048+12MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

4. Specify "Complete memory dump" and modify [Dump file:] in the [Write debugging information] group box.

e.g. Write the debug information in D drive write the file name "MEMORY.DMP".

D:\MEMORY.DMP

5. Click [Settings] on the [Performance] group box.

The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Modify [Initial Size] in the [Paging file size for selected drive] box to the value larger than the value of [Recommended] in the [Total paging file size for all drives], and click [Set].

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- For more information on "Recommended" value, see "About the System Partition Size" described earlier.
- In case the memory is expanded, re-specify the paging file to suit the new memory size.

9. Click [OK].

The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.

How to Create a User-mode Process Dump File

When the system is Windows Server 2008 R2

"User-mode Process Dump" is the file that records information when any application error occurs.

When any application error occurs, do not close the pop-up window that notifies the error, and then collect a dump using following process.

1. Right-click a blank part of the taskbar and click [Task Manager], or press Ctrl + Shift + Esc to start [Task Manager].
2. Click [Processes] tab.
3. Right-click on process name that you want to collect dump, and then click [Create Dump File].
4. The dump file is stored in following directory.

   C:\Users\<User Name>\AppData\Local\Temp

   NOTE: The folder may be treated as hidden folder. If the folder does not appear, run Explorer and select [Organize] - [Folder and search options] -[View], and check to [Show hidden files, folders, and drives].

When the User-mode Process Dump is created, pick up the file from the directory described in Step 4.

Refer to Knowledge Base of Microsoft web-site for more information about the User-mode Process Dump file collection.

"How to create a user-mode process dump file in Windows Server 2008"

http://support.microsoft.com/kb/949180/en-us

NOTE: For Windows Server 2008 R2, Dr. Watson is replaced by [Problem Reports and Solutions], therefore, you can not collect the Crash Dump file by existing Dr. Watson.

The above process provides you the information same level as the Crash Dump file.

When the system is Windows Server 2008

"User-mode Process Dump" is the file that records information when any application error occurs.

When any application error occurs, do not close the pop-up window that notifies the error, and then collect a dump using following process.

1. Right-click a blank part of the taskbar and click [Task Manager], or press Ctrl + Shift + Esc to start [Task Manager].
2. Click [Processes] tab.
3. Right-click on process name that you want to collect dump, and then click [Create Dump File].
4. The dump file is stored in following directory.

   C:\Users\<User Name>\AppData\Local\Temp

> **NOTE:** The folder may be treated as hidden folder. If the folder does not appear, run Explorer and select [Tools] - [Folder Options...] - [View], and check to [Show hidden files and folders].

When the User-mode Process Dump is created, pick up the file from the directory described in Step 4.

Refer to Knowledge Base of Microsoft web-site for more information about the User-mode Process Dump file collection.

"How to create a user-mode process dump file in Windows Server 2008"

http://support.microsoft.com/kb/949180/en-us

> **NOTE:** For Windows Server 2008, Dr. Watson is replaced by [Problem Reports and Solutions], therefore, you can not collect the Crash Dump file by existing Dr. Watson.
>
> The above process provides you the information same level as the Crash Dump file.

When the system is Windows Server 2003 (Dr.Watson)

Dr. Watson is a debugger for application errors. If any application error is detected, Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].

   The [Dr. Watson for Windows] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.

   The diagnostic information will be stored with the file name "DRWTSN32.LOG".

   NOTE: You can not specify network pass. Specify the pass on local computer.

4. Specify the location of crash dump file in the [Crash Dump] box.

   NOTE: "Crash Dump File" is a binary file that can be read with Windows Debugger.

5. Select [Full] radio button from [Crash Dump Type].
6. Check the following check box on the [Options] box.

   ☐ Dump Symbol Table

   ☐ Dump All Thread Contexts

   ☐ Append TO Existing Log File

   ☐ Create Crash Dump File

   For more information on each function above, refer to Online Help.
7. Click [OK].

Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble.

Network Monitor Setup (Windows Server 2008 R2/Windows Server 2008)

Microsoft Network Monitor allows you to examine and troubleshoot network problems.

NOTE: Windows Server 2008 R2/Windows Server 2008 does not provide Network Monitor.

To use Network Monitor on Windows Server 2008 R2/Windows Server 2008, install Network Monitor by following the steps below.

1. Download Microsoft Network Monitor from the following web site:
   http://support.microsoft.com/kb/933741/en-us
2. Run the downloaded file to start the installer.

   Follow the on-screen instructions to install Network Monitor.

   NOTE: If a Security Alert appears, click [Run]. Select [Complete] for a setup format.
3. Network Monitor is installed.

   NOTE: To remove Network Monitor, go to [Programs and Features].

Network Trace Capture (Windows Server 2008 R2/Windows Server 2008)

1. On the Start menu, start Microsoft Network Monitor.
2. On [Start Page], select [Create a new capture tab...] or select [New] in the [File] menu, and click [Capture...].

   A new tab for capturing a network trace is created.
3. On the [Select Networks] window, select a network you want to capture a trace.
4. On the [Capture] menu, click [Start] to start capturing a network trace.
5. On the [Capture] menu, click [Stop] to stop capturing a network trace.
6. On the [File] menu, select [Save As...].

   The [Save As] window appears. Select [All captured frames] from [Frame selection], and enter the names of a folder and a file.

   NOTE: The default folder name is:
   C:\Users\<User name>\Documents\Network Monitor 3\Captures
7. Click **Save** to create the file in the folder selected in step 6.

Network Monitor (Windows Server 2003)

To utilize Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].

   The [Control Panel] dialog box appears.

2. Double-click [Add or Remove Programs].

   The [Add or Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Component].

   The [Windows Components Wizard] dialog box appears.

4. Click [Management and Monitoring Tools] and then click [Details].

   The [Management and Monitoring Tools] dialog appears.

5. Click to select the [Network Monitor Tools] check box, and then click [OK].
6. The [Windows Components Wizard] dialog box appears again, so click [Next].
7. If the setup asks to install the disk, insert the OS CD-ROM into optical disk drive and click [OK].
8. Click [Finish] in the [Windows Component Wizard] dialog box.
9. Close the [Add or Remove Programs] dialog box.
10. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [Network Monitor]. For information on how to operate Network Monitor, refer to Online Help.

Re-installing the Operation System if Multiple Logical Drives Exist

Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

   <Windows Server 2008 R2/Windows Server 2008>

   ```
   Where do you want to install Windows?
   ```

   <Windows Server 2003>

   ```
   The following list shows the existing partitions and
   unpartitioned space on this computer.

   Use the UP and DOWN ARROW keys to select an item in the list.
   ```

   * Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.
3. Continue the clean installation again following the procedure described in this manual.
4. The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot be modified with the following procedure.

<Windows Server 2008 R2/Windows Server 2008>

1. Click Start menu, right-click [Computer], and specify [Manage] to start [Server Manager].
2. Specify the [Storage] - [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Paths...].
4. Click [Change...].
5. Choose the [Assign the following drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

```
Some programs that rely on drive letters might not run correctly.
Do you want to continue?
```

8. Close the [Server Manager].

<Windows Server 2003>

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Paths...].
4. Click [Change...].
5. Choose the [Assign the following drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

```
Changing the drive letter of a volume might cause programs to no longer run.
Are you sure you want to change this drive letter?
```

8. Close the [Computer Management].

INSTALLING MAINTENANCE UTILITIES

Various maintenance utilities are contained in your NEC EXPRESSBUILDER DVD-ROM. See Chapter 6 for installing the utilities to your server or management workstations.

UPDATING THE SYSTEM

IMPORTANT: If you install Windows Server 2003 CD-ROM which contains Service Pack 2 to your system, you do not have to apply Service Pack 2 again.

"Updating the System" is executed by Express Setup automatically.

Execute "Updating the System" in following cases.

- Modified system configuration.
- Recovered the system using recovery process.

See "Updating the System" section in Appendix D for detail of update process.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Connect Flash FDD or USB FDD to the USB connector.
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive and reboot the system.
3. Select [Tool menu (Normal mode)].
4. Select [English].
5. Select [Maintenance Utility].
6. Select [System Information Management].
7. Select [Save].

Installing with the OEM-Disk for Mass Storage Device

This section explains how to setup with the OEM-Disk. You usually do not have to do as follows. If your system has any Mass storage devices, you have to set as follows depending on your system. The detailed information is provided by the manual of the Mass storage device.

Installation of Mass Storage Device not to be Supported by Express Setup

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is RAID Controller, configure the RAID System before running the NEC EXPRESSBUILDER.
3. Boot the system from NEC EXPRESSBUILDER DVD-ROM.
4. Select [Load the optional driver into the EXPRESSBUILDER] from the Top menu, click [Next].

   Setting the driver disk for the mass storage controller. Press the "Perform" button.

   NOTE: By choosing this option, you can load the driver provided by CD-ROM or floppy disk to proceed with the Express Setup.

5. Perform Express Setup with the following settings.
   (a) When "Enter RAID settings" appears, check "Skip the logical drive creation".
   (b) Confirm [Apply OEM-Disk for mass storage device] is displayed in [Selected applications] box at "Select applications" steps.

Chapter 6

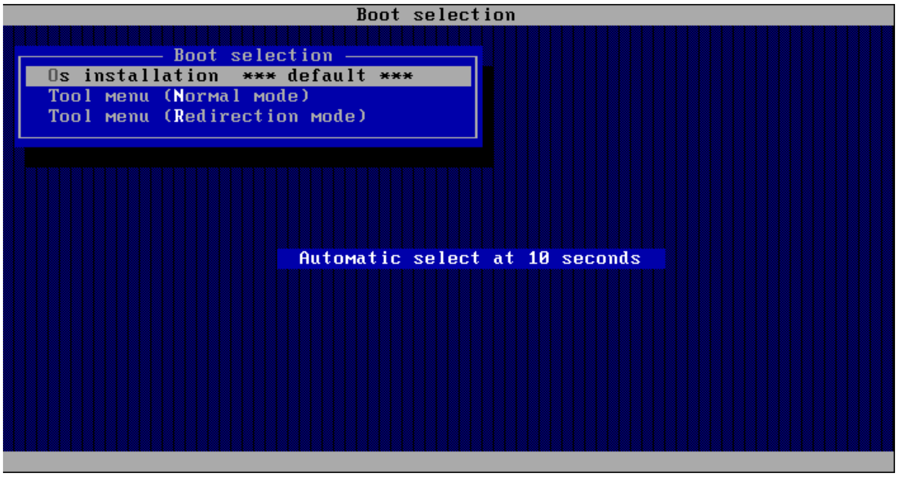
Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER DVD-ROM that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER helps you install the Operating system/the Management software or use the maintenance utilities.

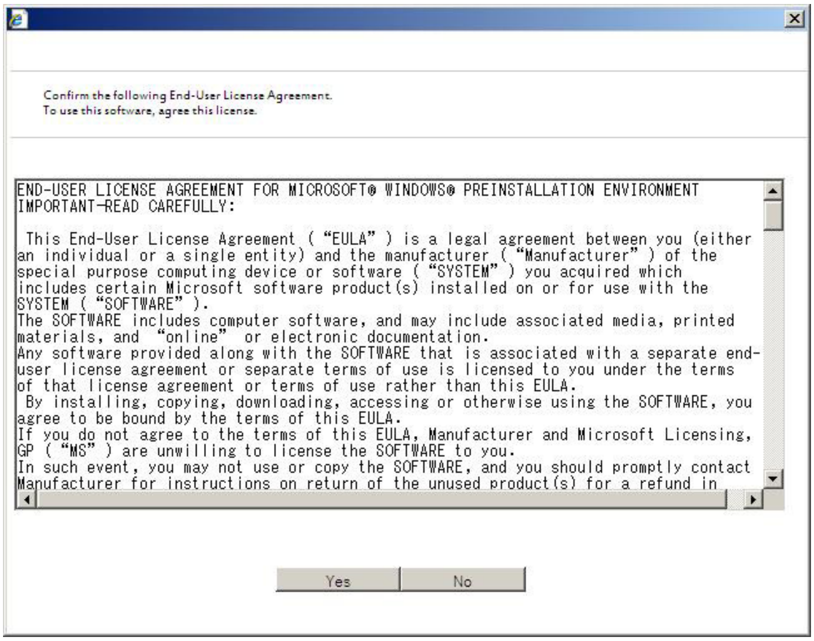
When you insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive and restart the system, the following menu appears.


Boot selection
Boot selection
Os installation *** default ***
Tool menu (Normal mode)
Tool menu (Redirection mode)

Automatic select at 10 seconds

- Os installation

If you select this item, the Software License Agreement screen of Windows PE appears.

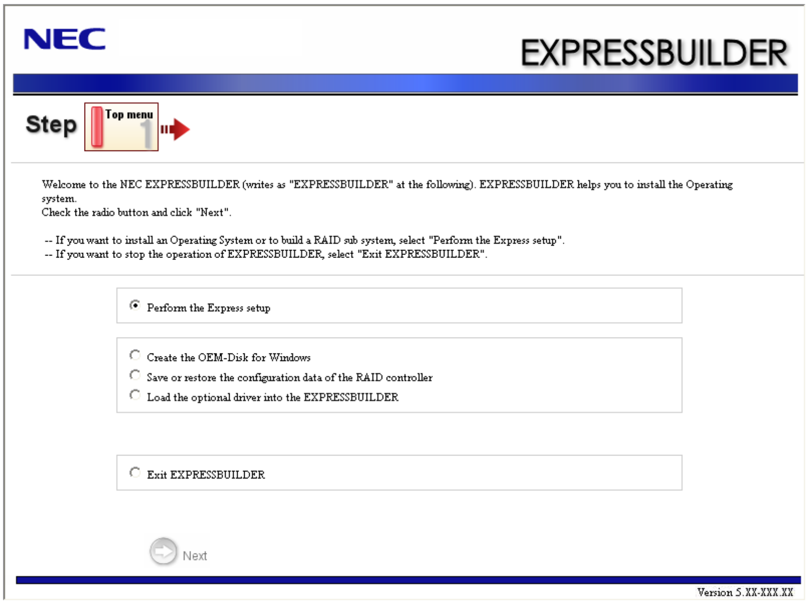


Confirm the following End-User License Agreement.
To use this software, agree this license.

END-USER LICENSE AGREEMENT FOR MICROSOFT® WINDOWS® PREINSTALLATION ENVIRONMENT
IMPORTANT-READ CAREFULLY:

This End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and the manufacturer ("Manufacturer") of the special purpose computing device or software ("SYSTEM") you acquired which includes certain Microsoft software product(s) installed on or for use with the SYSTEM ("SOFTWARE").
The SOFTWARE includes computer software, and may include associated media, printed materials, and "online" or electronic documentation.
Any software provided along with the SOFTWARE that is associated with a separate end-user license agreement or separate terms of use is licensed to you under the terms of that license agreement or terms of use rather than this EULA.
By installing, copying, downloading, accessing or otherwise using the SOFTWARE, you agree to be bound by the terms of this EULA.
If you do not agree to the terms of this EULA, Manufacturer and Microsoft Licensing, GP ("MS") are unwilling to license the SOFTWARE to you.
In such event, you may not use or copy the SOFTWARE, and you should promptly contact Manufacturer for instructions on return of the unused product(s) for a refund in

If you click [Yes], the Top menu appears.



Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".

-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".

● Perform the Express setup

○ Create the OEM-Disk for Windows
○ Save or restore the configuration data of the RAID controller
○ Load the optional driver into the EXPRESSBUILDER

○ Exit EXPRESSBUILDER

IMPORTANT: This tool is Configuration Tool that built on Windows PE 3.0 technology.
Pay attention to the automatic reboot that occurs after 72 hours from start.

You can use the Express Setup (see Chapter 5) or the following functions from this menu.

- Create the OEM-Disk

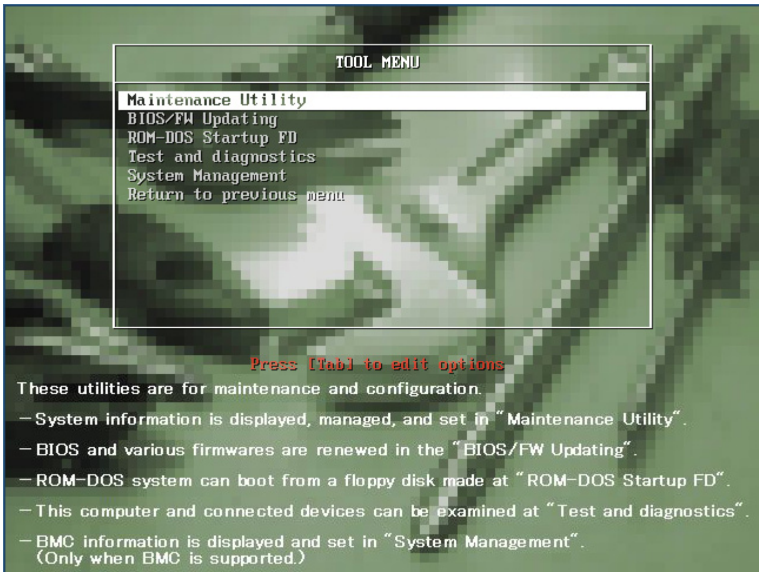
  You can create the Windows OEM-Disk to use at the Windows manual setup.

- Load the driver

  This function is not usually used. If you add the new device to the server, this function may use. (See Chapter 5.)

- Tool menu (Normal mode)

If you select this item, the Tool menu appears.


TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu
Press [Tab] to edit options

These utilities are for maintenance and configuration.

—System information is displayed, managed, and set in "Maintenance Utility".

—BIOS and various firmwares are renewed in the "BIOS/FW Updating".

—ROM-DOS system can boot from a floppy disk made at "ROM-DOS Startup FD".

—This computer and connected devices can be examined at "Test and diagnostics".

—BMC information is displayed and set in "System Management".
(Only when BMC is supported.)

You can use the below functions for maintenance.

– Maintenance Utility
The Maintenance Utility is usually used by the service representative. (See Chapter 8.)

– BIOS/FW Updating
You can update the system BIOS by using the Flash FDD or USB FDD.

– ROM-DOS Startup FD
The ROM-DOS Startup FD is used for starting the ROM-DOS system.

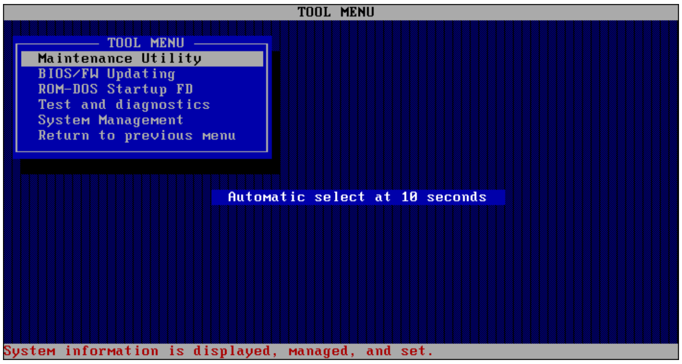
– Test and diagnostics
This function allows you to diagnose this computer. (See Chapter 7.)

– System Management
The parameters of BMC (Baseboard Management Controller) are set for remote control and alert. This menu's function is the same as the "System Management" of the "Maintenance Utility".

- Tool menu (Redirection mode)

  If you want to operate this computer via the BIOS redirection (the console-less function), select this item.

  NOTE: If you operate this computer via the Remote KVM function, select the "Tool menu (Normal mode)".


TOOL MENU
TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu

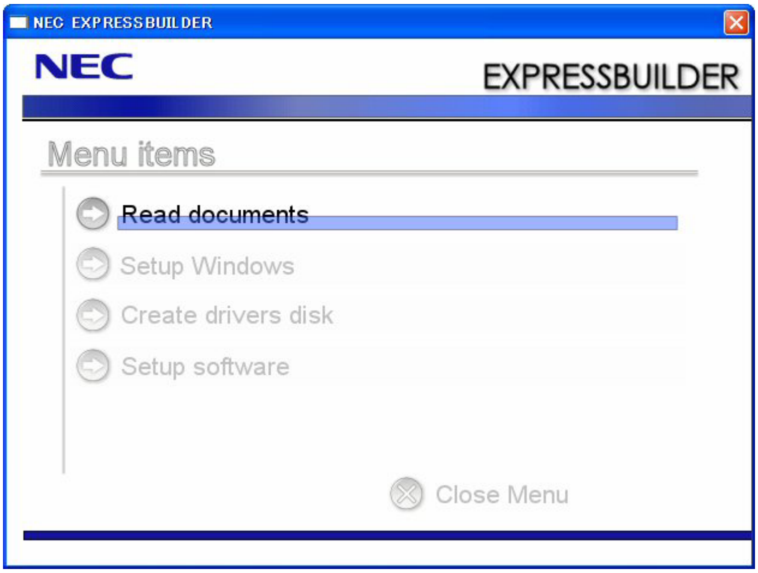
Automatic select at 10 seconds

System information is displayed, managed, and set.

The menu's functions are the same as the "Tool menu (Normal mode)".

Autorun Menu

When the NEC EXPRESSBUILDER DVD-ROM is inserted into the optical disk drive, Windows automatically launches the menu as shown below.


NEC EXPRESSBUILDER
NEC
EXPRESSBUILDER
Menu items
Read documents
Setup Windows
Create drivers disk
Setup software
Close Menu

This menu is used to,

- Read the User's Guide or the other documents,
- Update the server system (Windows drivers), and
- Install the management software.

NOTES:

- This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).
- Some documents are provided in PDF format. Use the Adobe Reader to view or print these documents.

If the menu does not appear, select "My computer" by using the Explorer, and double-click the icon of the optical disk drive that contains the NEC EXPRESSBUILDER DVD-ROM.

Some menu items are grayed-out when the logon user does not have the authority of the administrator or the menu item is not available for your system.

To use the menu,

- Click on the menu items, or
- Click the right mouse button on the menu window.

PARAMETER FILE CREATOR

"Parameter File Creator" is a tool to create [Parameter file] that is used for configuring the server with the Express Setup (see Chapter 5 for details).

If you use the Parameter file created by the Express Setup and Parameter File Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Parameter file] to setup the servers from NEC EXPRESSBUILDER.

When using a floppy disk, a USB floppy disk drive is required.

IMPORTANT:

- You cannot create [Parameter file] for Microsoft Windows Server 2003 x64 Editions.
- The setup using a parameter file saved in the Flash FDD is not supported.

NOTE: You can install Windows Server 2008 R2/Windows Server 2008/Windows Server 2003 without [Parameter file].
Also, you can modify/newly create [Parameter file] during the setup with NEC EXPRESSBUILDER.

Parameter File

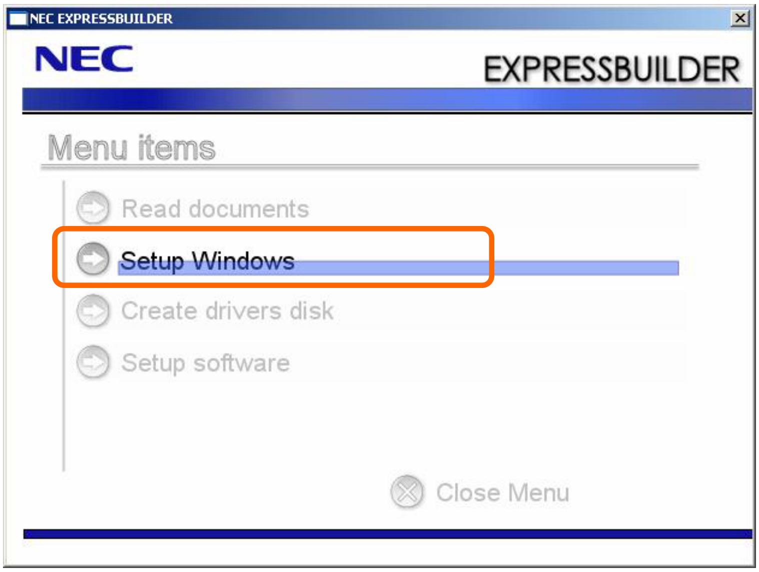
This section describes about specifying setup information that is necessary for OS installation and creating [Parameter file].

Follow the procedure below.

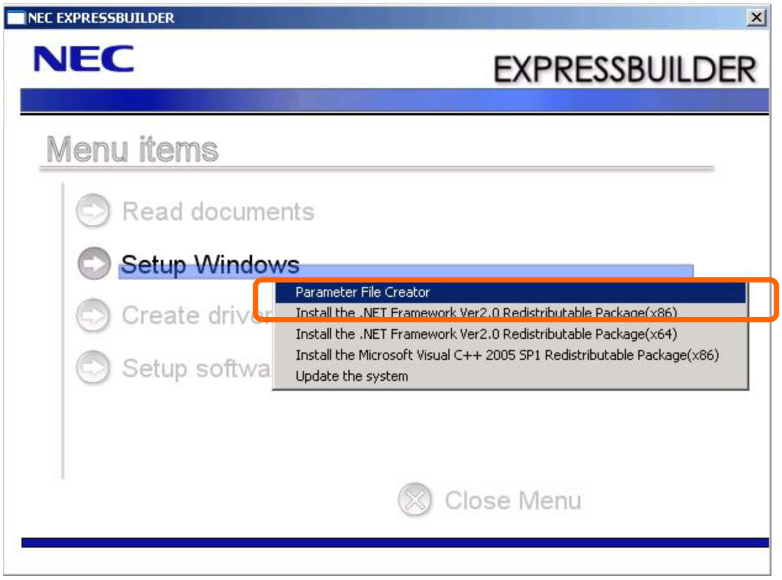
IMPORTANT: Do not remove NEC EXPRESSBUILDER DVD-ROM from drive during a parameter file creation.

1. Start the OS.
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.

   The menu will appear.
3. Right-click on the screen or left-click [Setup Windows]. The menu will appear.


NEC EXPRESSBUILDER
NEC
EXPRESSBUILDER
Menu items
Read documents
Setup Windows
Create drivers disk
Setup software
Close Menu

4. Click [Parameter File Creator].

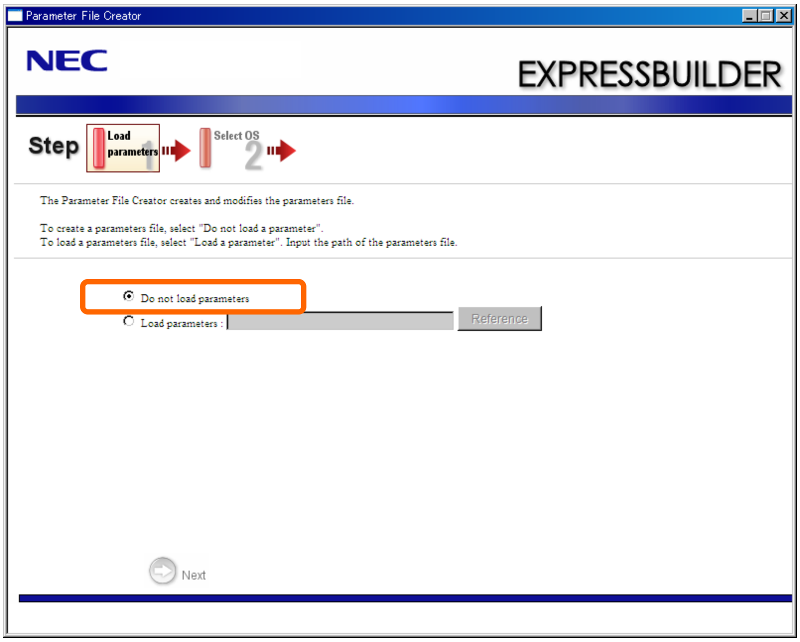

NEC EXPRESSBUILDER
NEC
EXPRESSBUILDER
Menu items
Read documents
Setup Windows
Create driv
Setup softwa
Parameter File Creator
Install the .NET Framework Ver2.0 Redistributable Package(x86)
Install the .NET Framework Ver2.0 Redistributable Package(x64)
Install the Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)
Update the system
Close Menu

Parameter File Creator will appear.

Now Loading...
Parameter File Creator

5. [Load Parameters] step is displayed.

   Select [Do not load parameters] from the menu, click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2

The Parameter File Creator creates and modifies the parameters file.

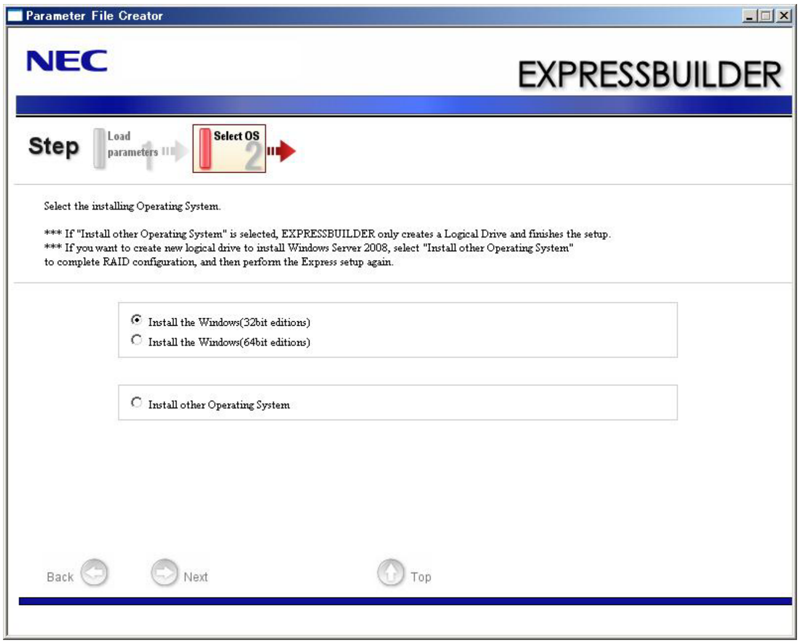
To create a parameters file, select "Do not load a parameter".
To load a parameters file, select "Load a parameter". Input the path of the parameters file.

● Do not load parameters
○ Load parameters :

Reference
Next

6. Select the installing Operating System.

   Select [Install the Windows (32bit editions)] or [Install the Windows (64bit editions)] from the menu, click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2

Select the installing Operating System.

*** If "Install other Operating System" is selected, EXPRESSBUILDER only creates a Logical Drive and finishes the setup.
*** If you want to create new logical drive to install Windows Server 2008, select "Install other Operating System"
to complete RAID configuration, and then perform the Express setup again.

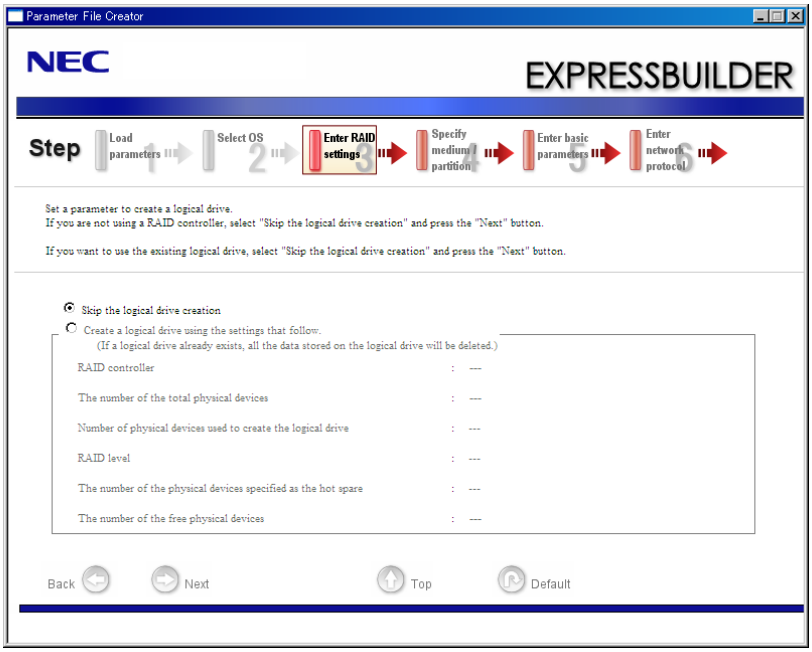
● Install the Windows(32bit editions)
○ Install the Windows(64bit editions)

○ Install other Operating System

Back
Next
Top

7. Enter the setting of a logical drive.

[Enter RAID setting] steps are displayed.
Confirm the parameters, modify if necessary, and then click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2
Enter RAID settings 3
Specify medium / partition 4
Enter basic parameters 5
Enter network protocol 6
Back
Next
Top
Default

Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.

If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.

● Skip the logical drive creation

○ Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)

RAID controller : ---
The number of the total physical devices : ---
Number of physical devices used to create the logical drive : ---
RAID level : ---
The number of the physical devices specified as the hot spare : ---
The number of the free physical devices : ---

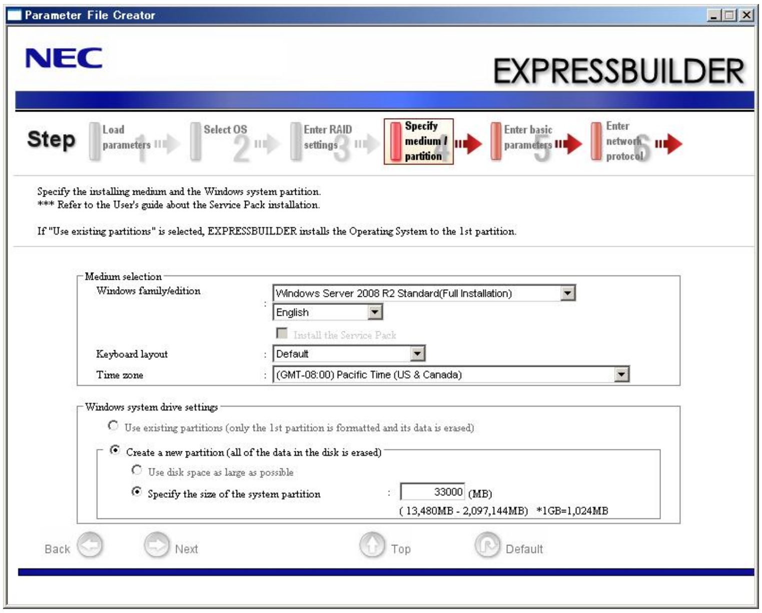
IMPORTANT: At "The number of the total physical devices", Parameter File Creator displays upper limit that the RAID Controller can support.
The total of "The number of physical devices used to create the logical drive" and "The number of the physical devices specified as the hot spare" must not exceed "The number of the total physical devices" which connected to the target system.

NOTE: You can use only the physical devices that have same model number to configure logical drive.

8. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008 R2]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2
Enter RAID settings 3
Specify medium / partition 4
Enter basic parameters 5
Enter network protocol 6
Back
Next
Top
Default

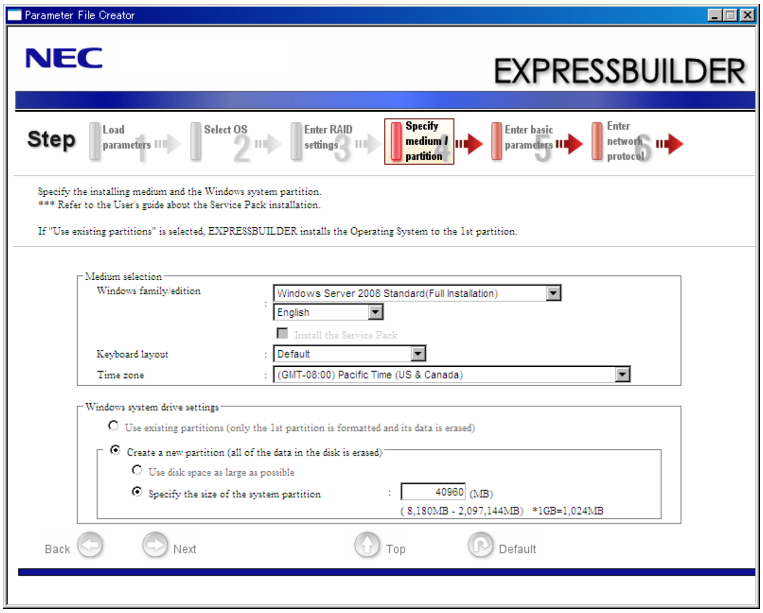
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.

Medium selection
Windows family/edition : Windows Server 2008 R2 Standard(Full Installation)
English
☐ Install the Service Pack
Keyboard layout : Default
Time zone : (GMT-08:00) Pacific Time (US & Canada)

Windows system drive settings
○ Use existing partitions (only the 1st partition is formatted and its data is erased)
● Create a new partition (all of the data in the disk is erased)
○ Use disk space as large as possible
● Specify the size of the system partition : 33000 (MB)
(13,480MB - 2,097,144MB) *1GB=1,024MB

[Windows Server 2008]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2
Enter RAID settings 3
Specify medium / partition 4
Enter basic parameters 5
Enter network protocol 6
Back
Next
Top
Default

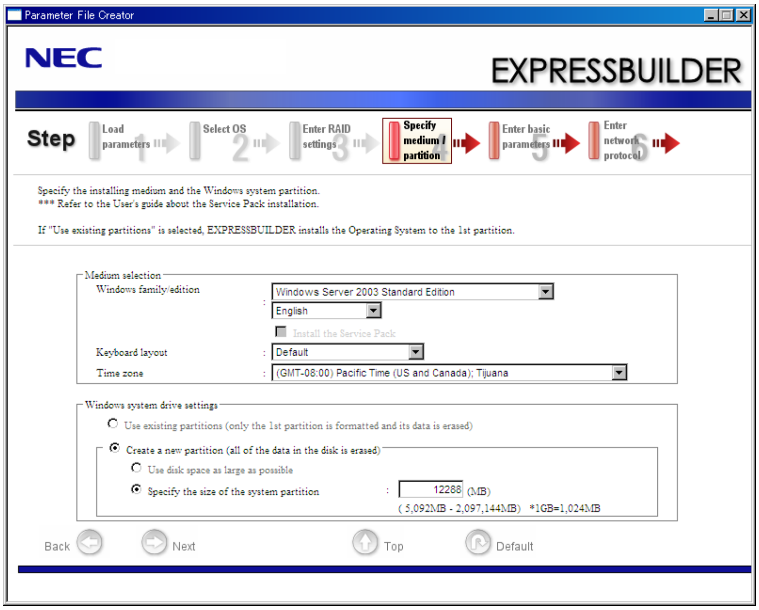
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.

Medium selection
Windows family/edition : Windows Server 2008 Standard(Full Installation)
English
☐ Install the Service Pack
Keyboard layout : Default
Time zone : (GMT-08:00) Pacific Time (US & Canada)

Windows system drive settings
○ Use existing partitions (only the 1st partition is formatted and its data is erased)
● Create a new partition (all of the data in the disk is erased)
○ Use disk space as large as possible
● Specify the size of the system partition : 40960 (MB)
(8,180MB - 2,097,144MB) *1GB=1,024MB

[Windows Server 2003]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2
Enter RAID settings 3
Specify medium / partition 4
Enter basic parameters 5
Enter network protocol 6
Back
Next
Top
Default

Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.

If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.

Medium selection

Windows family/edition : Windows Server 2003 Standard Edition
English
☐ Install the Service Pack
Keyboard layout : Default
Time zone : (GMT-08:00) Pacific Time (US and Canada); Tijuana

Windows system drive settings

○ Use existing partitions (only the 1st partition is formatted and its data is erased)
● Create a new partition (all of the data in the disk is erased)
  ○ Use disk space as large as possible
  ● Specify the size of the system partition : 12288 (MB)
  (5,092MB - 2,097,144MB) *1GB=1,024MB

IMPORTANT:

- If you install Windows Server 2003 R2 and Service Pack, apply Windows Server 2003 R2 DISC 2 after Express Setup completion, and then install Service Pack by "Updating the system".
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected when you operate Windows Server 2008 R2, NEC EXPRESSBUILDER installs the Operating System to the Windows partition (The Boot partition (if it exists) and the Windows partition are deleted).
  The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

Boot Partition Deleted	Windows Partition Deleted	User Data Partition Retained

- If "Use existing partitions" is selected when you operate Windows Server 2008 or Windows Server 2003, NEC EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

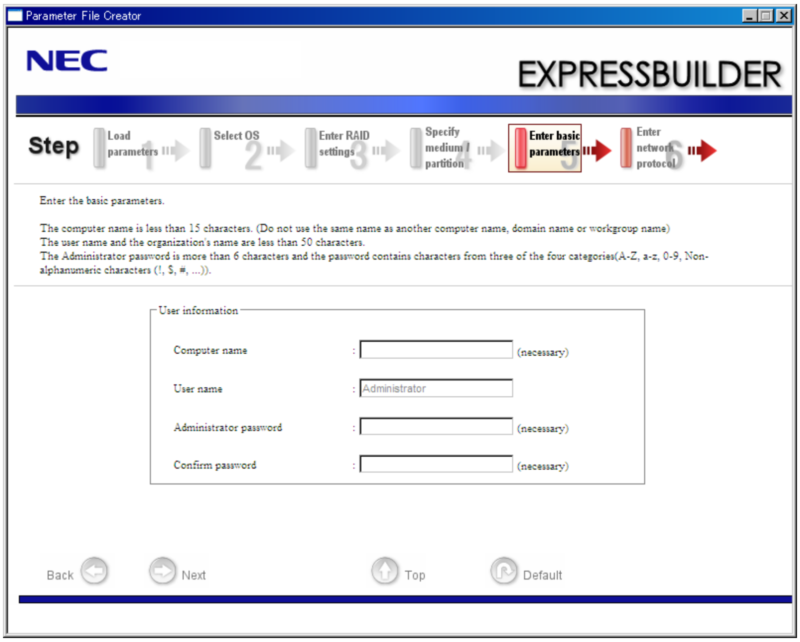
- You cannot re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

---

9. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed.
Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008 R2/Windows Server 2008]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2
Enter RAID settings 3
Specify medium / partition 4
Enter basic parameters 5
Enter network protocol 6
Back
Next
Top
Default

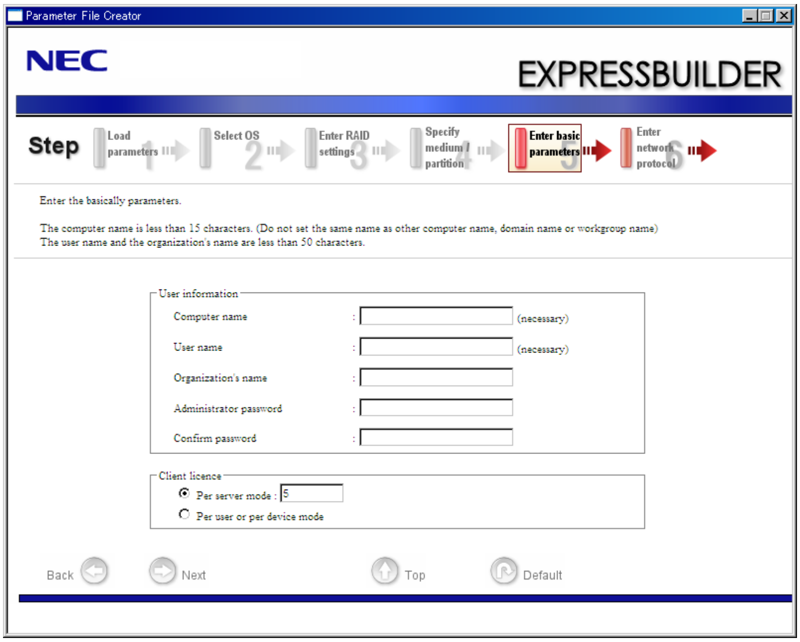
Enter the basic parameters.

The computer name is less than 15 characters. (Do not use the same name as another computer name, domain name or workgroup name)
The user name and the organization's name are less than 50 characters.
The Administrator password is more than 6 characters and the password contains characters from three of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, $, #, ...)).

User information

Computer name : (necessary)
User name : Administrator
Administrator password : (necessary)
Confirm password : (necessary)

[Windows Server 2003]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2
Enter RAID settings 3
Specify medium / partition 4
Enter basic parameters 5
Enter network protocol 6
Back
Next
Top
Default

Enter the basically parameters.

The computer name is less than 15 characters. (Do not set the same name as other computer name, domain name or workgroup name)
The user name and the organization's name are less than 50 characters.

User information

Computer name : (necessary)
User name : (necessary)
Organization's name :
Administrator password :
Confirm password :

Client licence

● Per server mode : 5
○ Per user or per device mode

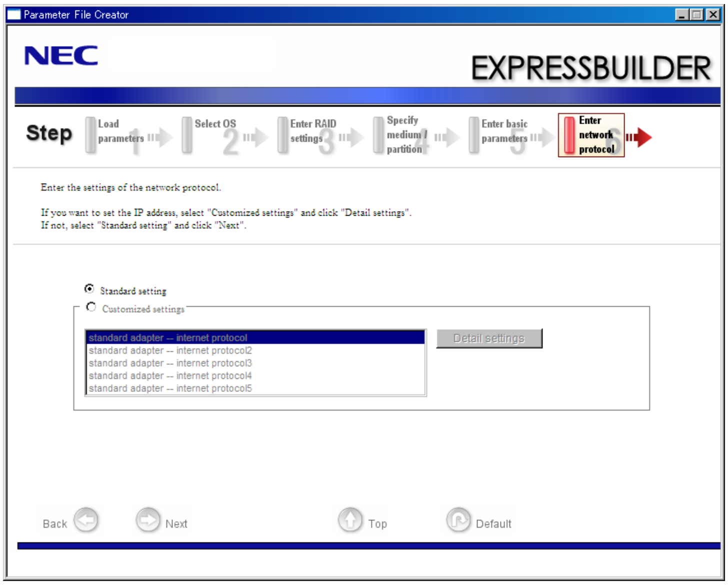
IMPORTANT: Computer name and User name are required parameters.

NOTE: Even if you do not input value into "Administrator password", "Confirm password", "●●●●●" is displayed.

---

10. Enter the setting of the network protocol.

[Enter network protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters 1
Select OS 2
Enter RAID settings 3
Specify medium / partition 4
Enter basic parameters 5
Enter network protocol 6
Detail settings
Back
Next
Top
Default

Enter the settings of the network protocol.

If you want to set the IP address, select "Customized settings" and click "Detail settings".
If not, select "Standard setting" and click "Next".

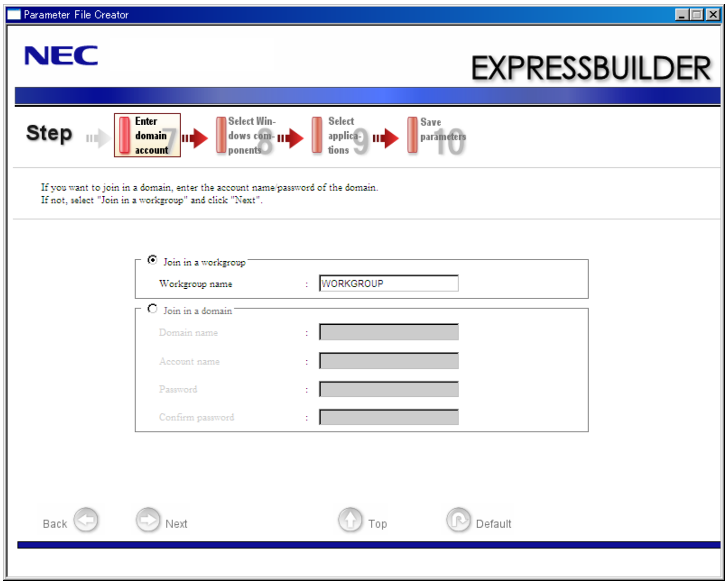
● Standard setting
○ Customized settings

standard adapter -- internet protocol
standard adapter -- internet protocol2
standard adapter -- internet protocol3
standard adapter -- internet protocol4
standard adapter -- internet protocol5

NOTE: The order of entry in custom setting may differ from the numbering of LAN port.

11. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account 7
Select Windows components 8
Select applications 9
Save parameters 10
Back
Next
Top
Default

If you want to join in a domain, enter the account name/password of the domain.
If not, select "Join in a workgroup" and click "Next".

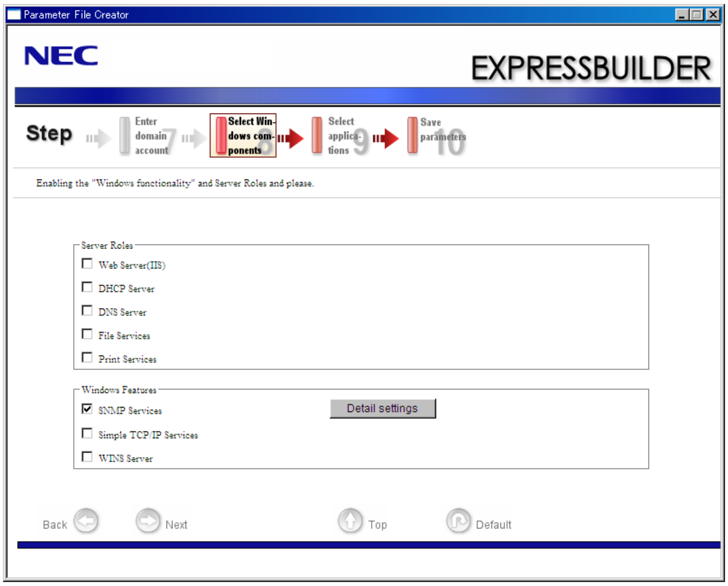
● Join in a workgroup
Workgroup name : WORKGROUP

○ Join in a domain
Domain name :
Account name :
Password :
Confirm password :

12. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next]

[Windows Server 2008 R2/Windows Server 2008]

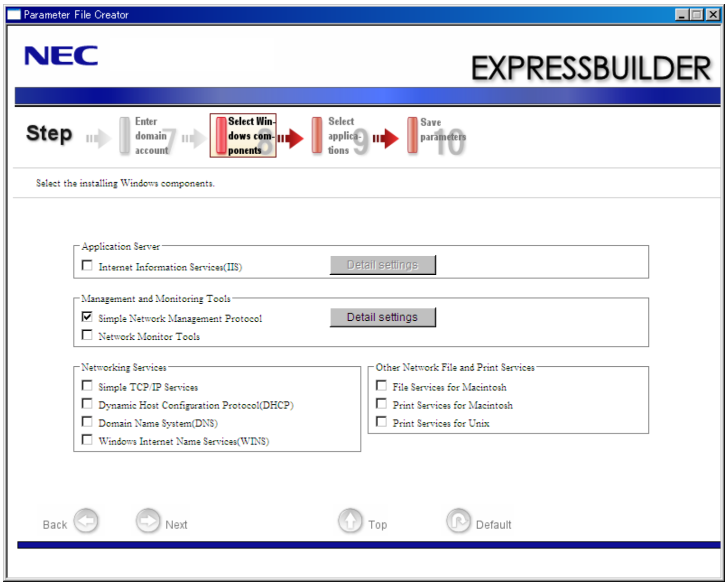

Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account 7
Select Windows components 8
Select applications 9
Save parameters 10
Detail settings
Back
Next
Top
Default

Enabling the "Windows functionality" and Server Roles and please.

Server Roles
☐ Web Server(IIS)
☐ DHCP Server
☐ DNS Server
☐ File Services
☐ Print Services

Windows Features
☑ SNMP Services
☐ Simple TCP/IP Services
☐ WINS Server

[Windows Server 2003]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account 7
Select Windows components 8
Select applications 9
Save parameters 10
Detail settings
Detail settings
Back
Next
Top
Default

Select the installing Windows components.

Application Server
☐ Internet Information Services(IIS)

Management and Monitoring Tools
☑ Simple Network Management Protocol
☐ Network Monitor Tools

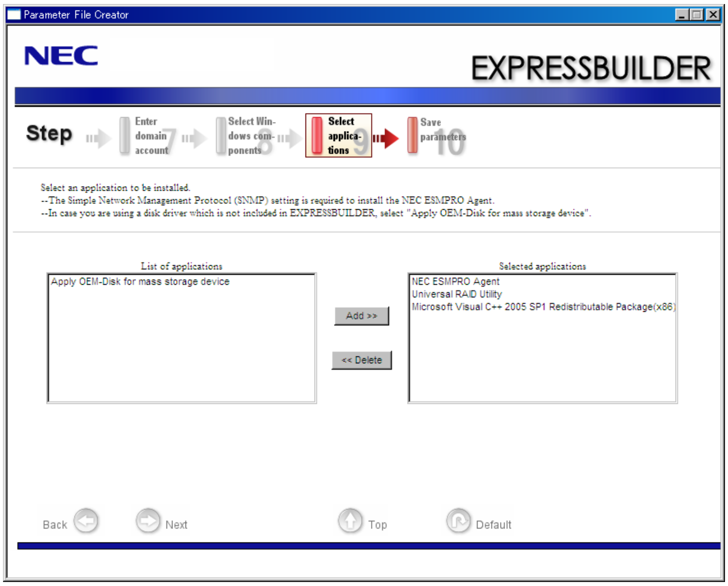
Networking Services
☐ Simple TCP/IP Services
☐ Dynamic Host Configuration Protocol(DHCP)
☐ Domain Name System(DNS)
☐ Windows Internet Name Services(WINS)

Other Network File and Print Services
☐ File Services for Macintosh
☐ Print Services for Macintosh
☐ Print Services for Unix

13. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008 R2/Windows Server 2008]

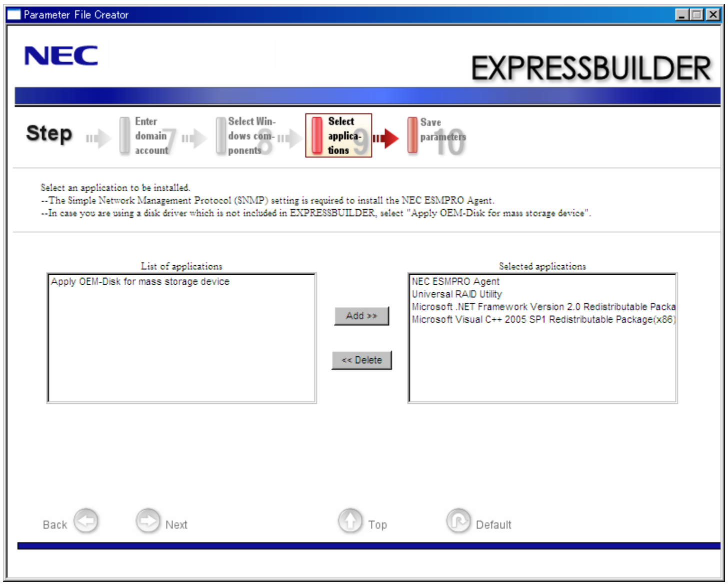

Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account 7
Select Windows components 8
Select applications 9
Save parameters 10
Add >>
<< Delete
Back
Next
Top
Default

Select an application to be installed.
--The Simple Network Management Protocol (SNMP) setting is required to install the NEC ESMPRO Agent.
--In case you are using a disk driver which is not included in EXPRESSBUILDER, select "Apply OEM-Disk for mass storage device".

List of applications
Apply OEM-Disk for mass storage device

Selected applications
NEC ESMPRO Agent
Universal RAID Utility
Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)

[Windows Server 2003]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account 7
Select Windows components 8
Select applications 9
Save parameters 10
List of applications
Selected applications
Add >>
<< Delete
Back
Next
Top
Default

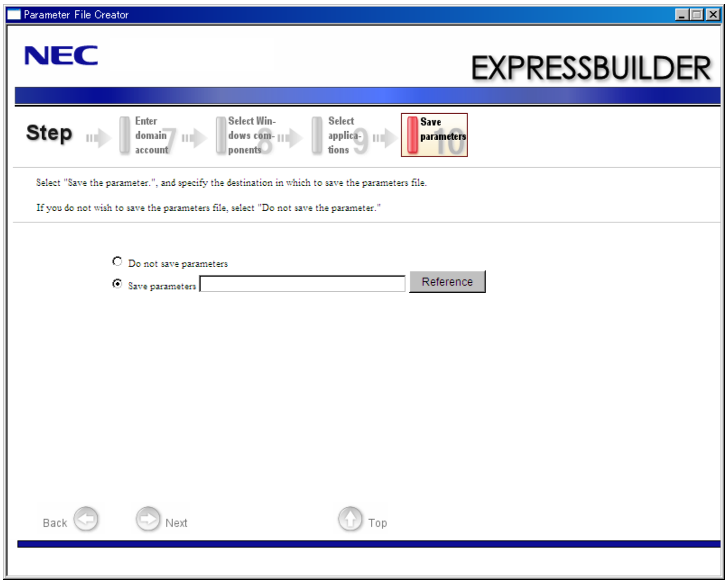
Select an application to be installed.
--The Simple Network Management Protocol (SNMP) setting is required to install the NEC ESMPRO Agent.
--In case you are using a disk driver which is not included in EXPRESSBUILDER, select "Apply OEM-Disk for mass storage device".

List of applications:
Apply OEM-Disk for mass storage device

Selected applications:
NEC ESMPRO Agent
Universal RAID Utility
Microsoft .NET Framework Version 2.0 Redistributable Packa
Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)

14. Save the parameters.

[Save parameters] steps are displayed.


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account 7
Select Windows components 8
Select applications 9
Save parameters 10
Reference
Back
Next
Top

Select "Save the parameter.", and specify the destination in which to save the parameters file.

If you do not wish to save the parameters file, select "Do not save the parameter."

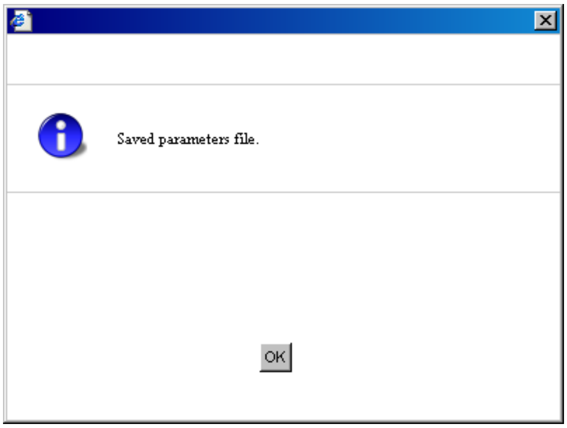
○ Do not save parameters
● Save parameters

If you want to save the parameters, set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

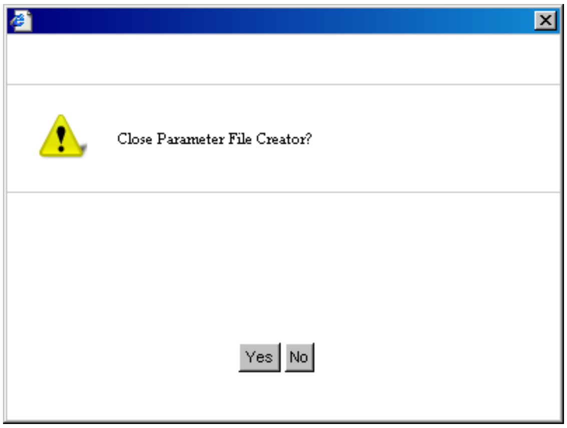
If not, select [Do not save parameters].

15. Saved to a floppy disk.



Saved parameters file.

Now [the floppy disk containing the parameters file] has been created.



Close Parameter File Creator?

Click [Yes] to exit Parameter File Creator.

NOTES:

- If you modify existing information file (parameter file), click "Load Parameters" at [Load Parameters] screen. Refer to help to modify information file.
- If you cancel operation on the way, click ☒ at the upper-right corner of the screen.

NEC ESMPRO

The NEC ESMPRO lets a system administrator manage remote servers across a network. NEC ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by NEC ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, and check server failure rates. The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

Functions and Features

The NEC ESMPRO offers many functions and features for managing remote servers across a network. These features help the system administrator perform daily system operation, system extension, and transfer tasks. Some features of NEC ESMPRO Manager include:

- Hardware and software server configuration
  - Hardware resources mounted in servers, such as the CPU, memory, disks, RAID System, and LAN boards.
  - Software resources, such as operating system information and drivers running on each server.
- Server failures
  - On-screen real-time displays provide the system administrator with the failure type, location, cause, and suggested corrective action.
  - Failure data includes hardware failure information such as system board temperature, memory failure, crashes, and software failure information.
- Performance
  - NEC ESMPRO monitors server performance and displays server usage on the screen and displays information, such as the rate of CPU load, memory usage, disk usage, and LAN traffic. Usage threshold values can help the system administrator monitor and prevent server overloads.

NEC ESMPRO Agent Extension

The NEC ESMPRO Agent Extension is software for the remote management of this server.

See the online documents for details on the functions and installation of the NEC ESMPRO Agent Extension.

NEC ExpressUpdate Agent

The NEC ExpressUpdate Agent enables you to control the version of the firmware and software that are installed on the server.

Using the NEC ESMPRO Manager, you can download update packages automatically and install them simply without terminating the system.

Refer to "Installation Manual" in the NEC EXPRESSBUILDER for more information about an installation and functions of the NEC ExpressUpdate Agent.

IMPORTANT: To get the information of the update package which does not support NEC ExpressUpdate, please refer to the web site below.

http://www.nec.com/global/prod/express/index.html

For installation procedure and detailed explanations on NEC ESMPRO, refer to the online document in the NEC EXPREDSBUILDER DVD.

Universal RAID Utility

Universal RAID Utility is an application to manage or monitor the following RAID Controllers.

- Onboard RAID Controller (LSI Embedded MegaRAID™)
- N8103-129 RAID controller (256MB, RAID 0/1)*
- N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*

Before attempting to operate Universal RAID Utility, read the "Universal RAID Utility Ver2.3 User's Guide" contained in NEC EXPRESSBUILDER DVD-ROM. The manual explains the installation procedure and notes on operating Universal RAID Utility.

Setup with Express Setup

You can install Universal RAID Utility with Express Setup contained in NEC EXPRESSBUILDER DVD-ROM. When you start the Express Setup, a dialog to specify an application appears. Select [Universal RAID Utility] on the dialog.

Manual Setup

Windows

You can start the setup program of Universal RAID Utility from [Autorun Menu].

Click [Setup Software] → [Universal RAID Utility] in [Autorun Menu].

You need to install the following software.

- Microsoft .NET Framework 2.0 or later
- The Runtime component of the Microsoft Visual C++ 2005 SP1

You can install these software from [Autorun Menu] too.

Click [Setup Windows] → [Install the .NET Framework Ver 2.0 Redistributable Package (x86)] (If CPU architecture is x64, [Install the .NET Framework Ver2.0 Redistributable Package (x64)]) in [Autorun Menu] for the setup of Microsoft.NET Framework 2.0.

Click [Setup Windows] → [Install the Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)] (Use the x86 package whatever the CPU architecture may be.) for the setup of the Runtime component of the Microsoft Visual C++ 2005 SP1.

• Microsoft .NET Framework

To use the RAID Viewer and Log Viewer, Microsoft .NET Framework Version 2.0 or higher is required.
Windows Server 2008 and Windows Server 2008 R2, Windows Vista, Windows 7 include .NET Framework Version 2.0 or higher. Therefore, you do not need to install .NET Framework in case of using them.

• Runtime component of Microsoft Visual C++ 2005 SP1 library

To use the RAID Viewer, the runtime component of the Microsoft Visual C++ 2005 SP1 library is required.
Windows Server 2008 and Windows Server 2008 R2, Windows Vista SP1 or later, Windows 7 include the runtime component of the Microsoft Visual C++ 2005 SP1 library. Therefore, you do not need to install the runtime component of the Microsoft Visual C++ 2005 SP1 library in case of using them as operating system.

Linux

You need to run the setup.sh in the install image of Universal RAID Utility.

There is the install image of Universal RAID Utility in the following directory of NEC EXPRESSBUILDER.

/*BBB*/lnx/pp/uraidutl

The part of BBB is BBB of the medium number (5.AA-BBB.CC) of NEC EXPRESSBUILDER.

Creating Logical Drive of RAID 6

You must use four or larger Physical Devices for creating the Logical Drive of RAID 6 by Universal RAID Utility. If you want to create the Logical Drive from three Physical Devices, you need to use WebBIOS.

NEC PRODUCT INFO COLLECTION UTILITY

The NEC Product Info Collection Utility is used to collect various system configuration and log information for maintenance or troubleshooting purpose of the server.

This utility can be installed from NEC EXPRESSBUILDER DVD-ROM.

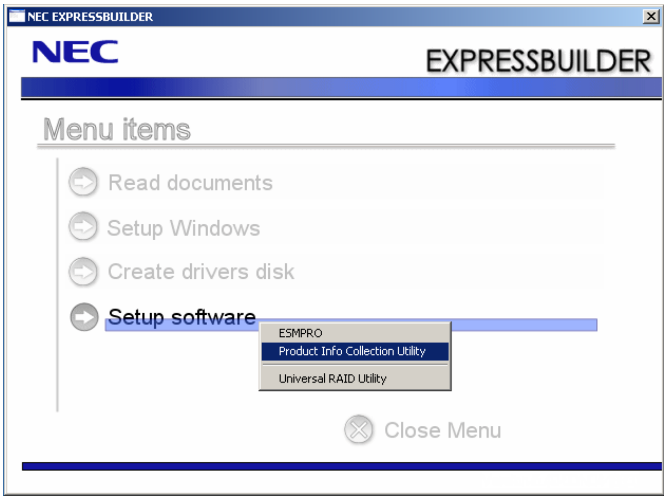
NOTE: Supported Operating Systems of this utility is as follows.

- Windows Server 2003
- Windows Server 2003 x64 Editions
- Windows Server 2008

Installation

You can install this utility according to the following procedure.

1. Insert NEC EXPRESSBUILDER DVD-ROM in the optical disk drive after OS starts.
2. Click from the menu displayed with Auto-run in order of [Setup software] – [Product Info Collection Utility].
3. The installation of this utility is started. Thereafter, install it according to the message in the dialog box. (In default, it is installed in "System drive: \ezclct" folder.)


NEC EXPRESSBUILDER
NEC
EXPRESSBUILDER
Menu items
Read documents
Setup Windows
Create drivers disk
Setup software
ESMPRO
Product Info Collection Utility
Universal RAID Utility
Close Menu

IMPORTANT:

- Log-in the system in account with the administrator authority.
- 2.5GB or more free space is required for the installation drive.

Using Utility

Execute \stdclct\collect.exe in the installation folder of this utility.

The log folder is made in the above-mentioned folder, and various information on this device is stored in the data compressed file (zip form).

Uninstallation

Except for Server Core

Choose [Add or Remove Programs] - [Product Info Collection Utility (Vx.x.x)] from the Control Panel. Thereafter, uninstall it according to the message in the dialog box.

For Server Core

Enter the following command from the command prompt.

```
Wmic product where name="Product Info Collection Utility" call uninstall
```

Chapter 7

Maintenance

This chapter describes the daily maintenance of the server and precautions when relocating or storing the server.

MAKING BACKUP COPIES

NEC recommends you make backup copies of your valuable data stored in hard disk drives of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your service representative.

When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Also make a backup copy of the RAID System configuration data by using NEC EXPRESSBUILDER, if your system is in the RAID System configuration. When your hard disk drives have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. For how to make a backup copy of the configuration data, see Chapter 3.

CLEANING

Clean the server on a regular basis to keep the server in a good shape.

WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not disassemble, repair, or alter the server.
- Disconnect the power plug before working with the server.

Cleaning the Server

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner and benzene to clean the server.
- The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is off-powered (the POWER/SLEEP lamp goes off).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly, wipe the server with it once again.
7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Interior

One of the most important items in a good maintenance program is regular and thorough cleaning of the interior of the server, especially around the mother board.

Dust buildup inside the server can lead to several problems. As dust acts as a thermal insulator, a buildup can prevent proper system cooling. Excessive heat will shorten the life of server components. Also, dust may contain conductive or corrosive materials that can cause short circuits or corrosion of electrical contacts.

How often you should clean the interior of the server depends on the environment in which it is located. For most office environments, you probably should clean the server every 12 months. For more severe environments, clean the interior every 6 months.

Cleaning the interior of the server entails powering off the server and removing the left side cover. You will need a small vacuum cleaner (with plastic tipped nozzle and electrostatic protection), computer grade canned air, and a small brush for cleaning the interior.

Follow the procedure below to clean the interior of the server.

⚠ WARNING

Unplug all power cords.

Unplug all power cords before performing any maintenance. Voltage is present inside the server and display unit even after the power is turned off. All voltage is removed only when the power cord is unplugged.

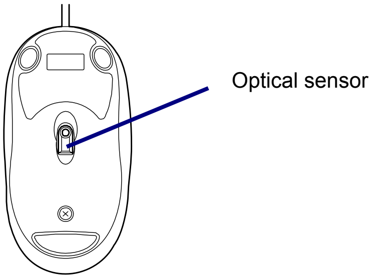
IMPORTANT: Do not use the brush made of chemical fabric, or the cleaning material that will generate an electrostatics.

1. Turn off the server and unplug all power cables.
2. Remove the left side cover. (See Chapter 9.)
3. Remove the dust accumulate on the air inlet of the front and the rear fan.
4. Use a small brush to loosen any dust and debris on the mother board.
5. Use computer grade canned air to blow dust off components on the mother board.
6. Use a small vacuum cleaner with plastic tip to vacuum out dust and debris from the interior of the server.
7. Reinstall the left side cover. (See Chapter 9.)
8. Reconnect all power cables and turn on the server.

Cleaning the Keyboard/Mouse

Make sure that the server and peripheral devices are all off-powered (the POWER/SLEEP lamp goes off), and then wipe the keyboard surface with a dry cloth.

The mouse does not work normally if its optical sensor is stained. Wipe the optical sensor with a dry cloth.



Cleaning Disc

A dusty disc or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and disc regularly:

1. Make sure that the server is powered (the POWER/SLEEP LED is lit).
2. Press the CD tray Open/Close button on the front of the optical disk drive. The tray opens.
3. Hold the disc lightly and take it out from the tray.

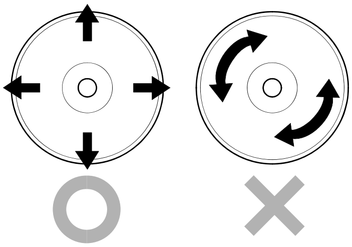
NOTE: Do not touch the signal side of the disc with your hand.

4. Wipe the tray with a dry soft cloth.

IMPORTANT: Do not wipe the lens of the optical disk drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Push on the tray front to close the tray.
6. Wipe the signal side of the disc with a dry soft cloth.

IMPORTANT: Wipe disc from the center to the outside. Use only disc cleaner if necessary. Cleaning a disc with record spray/cleaner, benzene, or thinner causes damage to the disc contents. At worst, inserting the disc into the server may cause failure.



SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tool menu] - [Test and diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

IMPORTANT: When executing the system diagnostics, make sure to disconnect the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

NOTE: On checking the hard disk drive, no data is written into the disk.

Startup and Exit of System Diagnostics

There are two ways to diagnose the server: to use the local console (keyboard) of the server itself, and to use the management PC via serial port (remote console).

> **IMPORTANT:** Two methods of LAN and the serial port are mentioned in "MAINTENANCE TOOLS" of Chapter 8 "Troubleshooting" in the way of communicating in remote console.
> Use the serial port to execute System Diagnostics with remote console. The LAN connection is not for System Diagnostics.

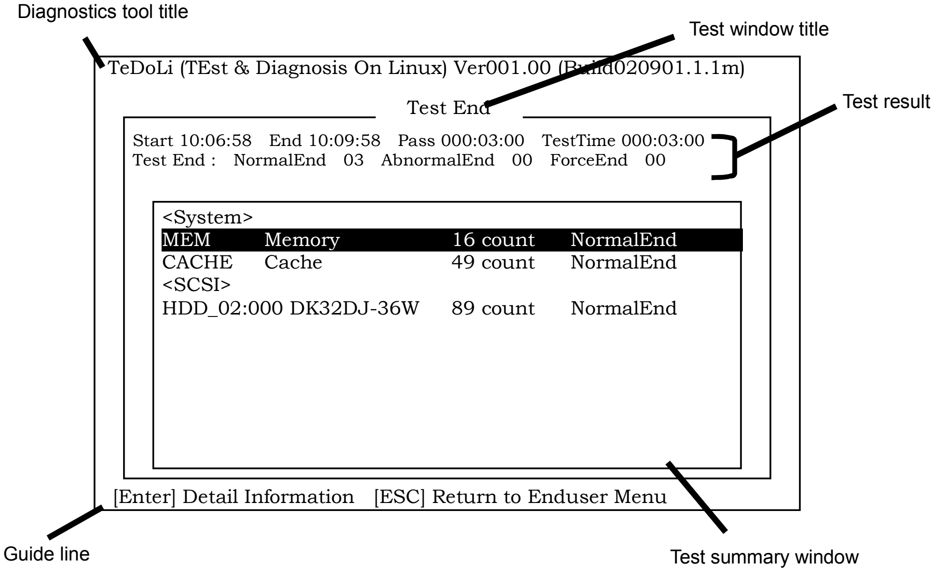
Procedures to start the diagnostics program are as follows:

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER DVD-ROM to start the system.
5. Select [Tool menu (Normal mode)] when local console of the server is used for, or select [Tool menu (Redirection mode)] when remote console is used for.

> **NOTE:** If the system displays the [Language selection] menu, select [English].

6. Select [Test and diagnostics].

Select [End-User Mode] and the system diagnostics starts. The diagnostics will be completed in approximately three minutes. When the diagnostics is completed, the screen of the display changes as shown below:



```
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
                         Test End
Start 10:06:58   End 10:09:58   Pass 000:03:00   TestTime 000:03:00
Test End :   NormalEnd   03   AbnormalEnd   00   ForceEnd   00

<System>
MEM        Memory              16 count    NormalEnd
CACHE      Cache               49 count    NormalEnd
<SCSI>
HDD_02:000 DK32DJ-36W          89 count    NormalEnd

[Enter] Detail Information   [ESC] Return to Enduser Menu
```

– Diagnostics tool title

Shows the name and version of the diagnostic tool.

– Test window title

Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.

– Test result

Shows the start, end, and elapsed time and completion status of the diagnostics.

– Guide line

Shows the details of the keys to operate window.

– Test summary window

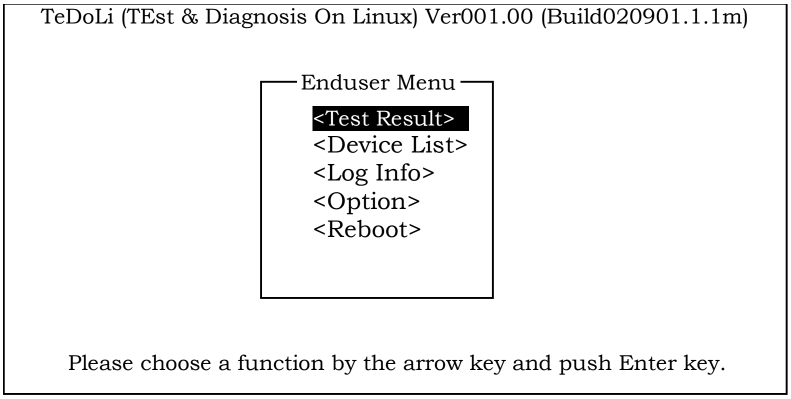
Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the Test summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your service representative.

7. Follow the guide line shown at the bottom of the screen, and press the **Esc** key.

   The [Enduser Menu] below is displayed.



```
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)

                    Enduser Menu
                      <Test Result>
                      <Device List>
                      <Log Info>
                      <Option>
                      <Reboot>

  Please choose a function by the arrow key and push Enter key.
```

<Test Result>	Shows the diagnostics completion screen of the above diagnostics.
<Device List>	Shows a list of connected devices.
<Log Info>	Shows the log information of the diagnostics. Log information can be saved. To save it, connect a FAT formatted removable media, and select <Save(F)>.
<Option>	Optional features can be used from this menu.
<Reboot>	Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.

   The server restarts and the system is started from the NEC EXPRESSBUILDER.

9. Exit the NEC EXPRESSBUILDER, and remove the DVD from the optical disk drive.
10. Power off the server and unplug the power cord from the receptacle.
11. Reconnect all the LAN cables that have been disconnected in Step 2 to the server.
12. Plug in the power cord.

This completes the system diagnostics.

Notes on Using Power Control Feature

Power consumption of the server can be controlled through command line interface of EXPRESSSCOPE Engine 2 (BMC) or NEC ESMPRO Manager. Using this feature to suppress the upper limit of power consumption, the larger number of servers can be installed in the site where the allowable power consumption is limited.

Refer to the User's Guide of EXPRESSSCOPE Engine 2 or Online Help of NEC ESMPRO Manager for how to enable this feature.

Applicable OS

Power control feature uses P-State (Performance State) of processor that is defined in ACPI (Advanced Configuration and Power Interface). Thus, the OS must support P-State. The following OSs support the power control feature.

OS that supports power control feature

- Windows Server 2003, Standard Edition (SP1 or later)
- Windows Server 2003, Enterprise Edition (SP1 or later)
- Windows Server 2003 R2, Standard Edition
- Windows Server 2003 R2, Enterprise Edition
- Windows Server 2003 R2, Standard x64 Edition
- Windows Server 2003 R2, Enterprise x64 Edition
- Windows Server 2008, Standard
- Windows Server 2008, Enterprise
- Windows Server 2008, Standard x64
- Windows Server 2008, Enterprise x64
- Red Hat Enterprise Linux 5.3 or later
- Red Hat Enterprise Linux 5.3 or later (EM64T)

Notes on Using Windows Server 2008

The following event will be logged in Event Viewer if power control feature is used on Windows Server 2008. However, it is not the problem in operating the system, the event is logged because the P-State is controlled by the server side.

Event ID: 7

Source: Kernel-Processor-Power

Level: Warning

Description: The speed of processor 0 is being limited by system firmware. The processor has been in this reduced performance state for 71 seconds since the last report.

RELOCATING/STORING THE SERVER

Follow the procedure below to relocate or store the server:

WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Never attempt to lift the server only by two or less persons.
- Do not install the server in any place other than specified.
- Do not pinch your finger with mechanical component.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.
- Avoid installation in extreme temperature conditions.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact your service representative.
- Make sure to make a backup copy of your valuable data in the hard disk drive, if any.
- Make sure not to apply a shock to hard disk drives to relocated the server if the contains any.

1. Take a media out of the server, if any.
2. Power off the server (the POWER/SLEEP lamp goes off).
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Hold the server by its bottom to carry the server.

   IMPORTANT: Do not hold the front mask to lift the server. The front mask may be disengaged from the server, causing personal injury.

6. Protect the server with the shock-absorbing materials, and pack it securely.

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Chapter 8

Troubleshooting

If your server does not operate as expected, read this chapter before assuming a failure.

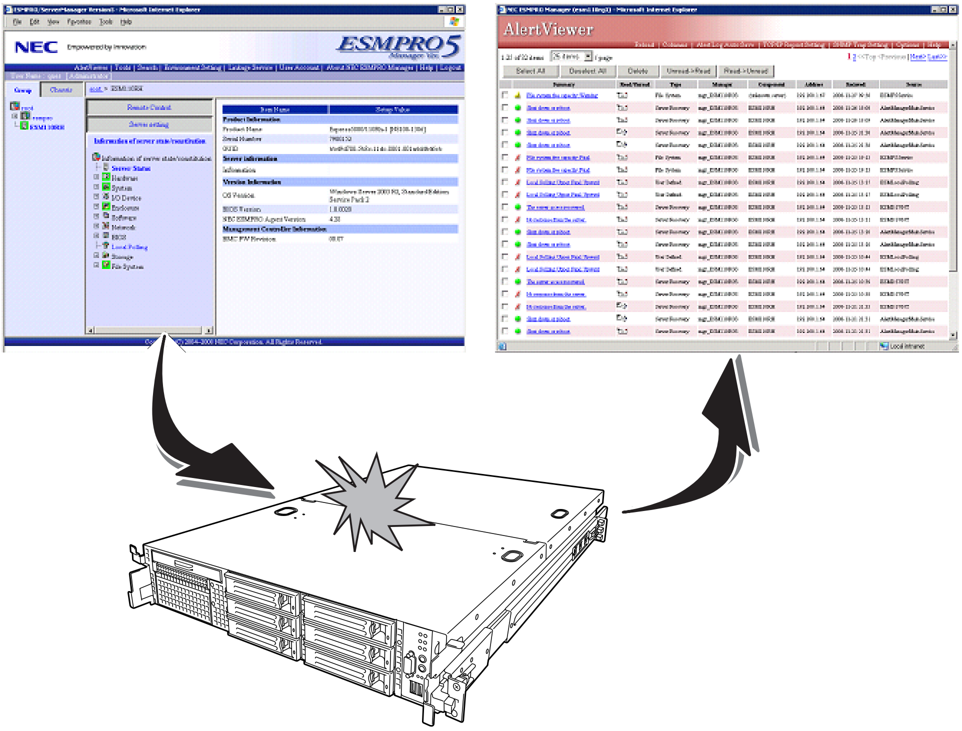
NOTE: For provision against an unexpected failure, it is recommended to install the maintenance utility, NEC ESMPRO, to the server and client computers.

SYSTEM VIEWERS

Monitor the occurrence of fault by using NEC ESMPRO Manager during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported in NEC ESMPRO Manager.

Example



NOTE: For provision against an unexpected failure, it is recommended to install NEC ESMPRO Manager to your computer.

STATUS INDICATORS

This section explains the indication and meanings of the server LEDs.

POWER LED (💡)

The POWER LED is on (green) while the server is being powered. It is off while no power is supplied to the server. Note that this LED blinks while the server is on standby.

STATUS LED (⚠)

The STATUS LED is on (green) while the server is operating normally. If the STATUS LED is off or turns amber and flashes, it indicates that the server is in abnormal state.

The table below explains the STATUS LED indication, the meanings, and the procedures.

NOTES:

- If NEC ESMPRO is installed, you can confirm the cause of a failure by referring to the error log.
- If shutdown processing can be performed via the operating system when you want to restart the system after turning the power off, restart the system by performing shutdown processing. If shutdown processing cannot be performed, restart the system by resetting the system, forcibly turning the power off, (see page 8-59), or disconnecting and then connecting the power cord.

STATUS LED indication	Description	Procedure
On (green)	The server is operating normally.	–
Flashing (green)	The server is operating with the memory in degraded state. An uncorrectable memory error has often occurred.	Identify the device in degraded state by using the BIOS setup utility "SETUP," and replace it as soon as possible.
Off	The power is off.	Turn on the power.
	POST is in progress.	Wait for a while. The STATUS LED turns green when POST is completed.
	A CPU error occurred. (IERR)	Turn the power off and then turn it on. If the POST screen displays an error message, take notes of the message, and contact your sales representative.
	A timeout occurred when the time set for the watchdog timer arrived.	
	A CPU bus error occurred.	
	A memory dump request is made. (The STATUS LED stays on (green) during a dump caused by software.)	Wait until the memory dump is completed.
On (amber)	A temperature alarm was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS LED indication does not change when the fans are normal, contact your sales representative.
	A voltage alarm was detected.	Contact your sales representative.
	All the power supply units failed.	
	A CPU temperature alarm was detected.	
	A temperature alarm was detected on chipset.	
Flashing (amber)	Either of the following was detected in the redundant power configuration: AC power not supplied to one of the two power supply units Failure of one of the two power supply units	Connect the power cord to supply power. If the power supply unit is faulty, contact your service representative.
	A fan alarm was detected.	Check if the fan units are firmly connected. If the STATUS LED indication does not change when the fans are normal, contact your sales representative.
	A temperature warning was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS LED indication does not change when the fans are normal, contact your sales representative.
	A voltage warning was detected	Contact your service representative.
	An error was detected on either of the hard disk drives.	
	Detected that the top cover is open.	Check if the top cover is open or not.

ACT LED (🖧)

The ACT LED is green while the server is connected to the LAN. The LED flashes while the server is accessed via the LAN (during transmission/reception of packets). The number next to the icon indicates the network port number on the rear panel of the server.

DISK ACCESS LED (🛢)

The DISK ACCESS LED indicates the status of the hard disk drive mounted in the hard disk drive bay.

The LED turns green each time access is made to the hard disk drive.

When the DISK ACCESS LED turns amber, it indicates that a hard disk drive failure has occurred. Check the hard disk drive LED for the status of the failing hard disk drive.

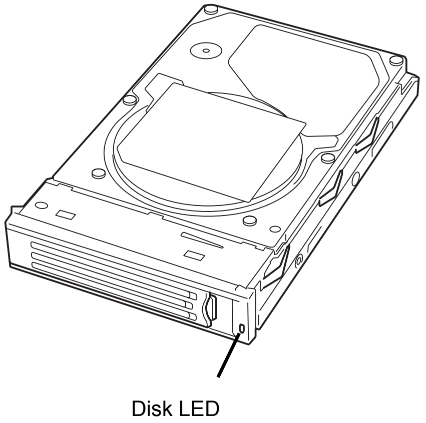
UID LED (ID)

When the UID switch is pressed, the front panel UID LED (blue) and the motherboard UID LED turn on or flash. The motherboard UID LED is visible through the rear of the chassis and allows you to locate the server you're working on from the rear of the servers on a rack. For details, see **Identification of Servers ~ UID Switch ~** on page 2-23.

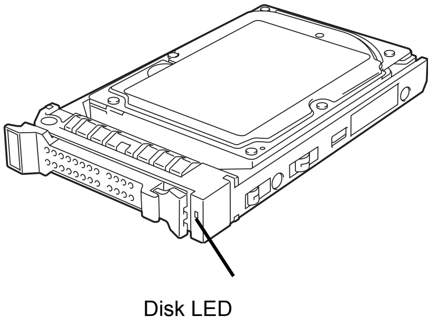
NOTE: LEDs can be turned on or made to flash by using remote management software.

Hard Disk Drive LED

The disk LED located on the drive carrier indicates the following depending on the status:



3.5-inch hard disk drive



2.5-inch hard disk drive

- Flashing (green)

  The LED indicates that the hard disk drive is being accessed.

- On (amber)

  The LED indicates a failure of a hard disk drive mounted in the RAID system.

> **NOTE:** Even if one (two in RAID6) of the hard disk drives fails in the logical drive (RAID1, RAID5, RAID6, RAID10, RAID50), the server can continue operating. However, replace the hard disk drive as soon as possible, and perform reconstruction (rebuild) processing. (The failing hard disk drive can be replaced in hot swap mode.)

- Blinking in green and amber alternately

  The LED indicates that reconstruction (rebuild) processing is being performed for the hard disk drive. (This flashing does not indicate a failure.) When a failing hard disk drive is replaced in RAID System, the system automatically rebuilds the data. (Auto-rebuild function) The LED switches back and forth between green and amber during rebuild processing.

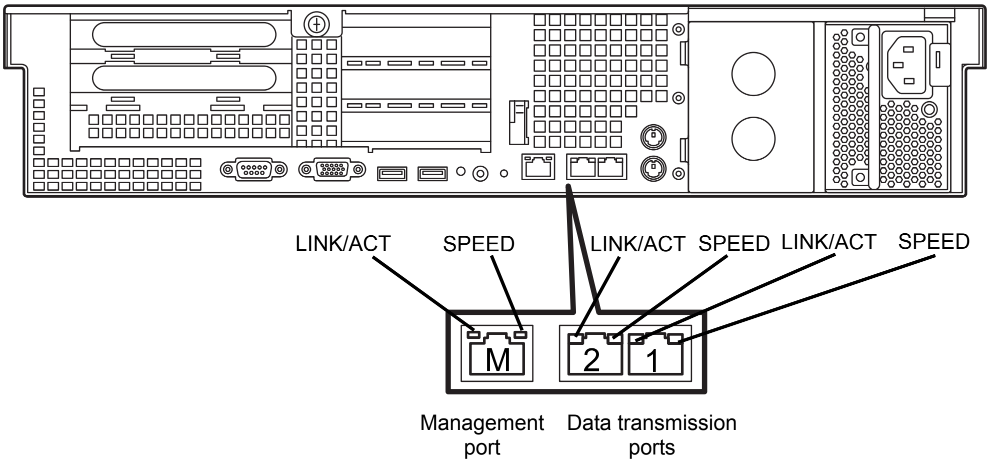
  The LED goes off when the rebuild processing has terminated. It turns amber when the rebuild processing fails.

IMPORTANT: If the server is turned off during rebuild processing, the processing is stopped. Restart the server, mount the new hard disk drive in hot swap mode, and then perform rebuild processing again. Observe the following notes on using the auto-rebuild function.

- Do not turn the power off or reboot the system during rebuild processing.
- Let 90 seconds or more pass between removing a failing hard disk drive and mounting a new one.
- Do not replace a failing hard disk drive while rebuild processing is being performed on another hard disk drive.

LAN Connector LEDs

There are two LEDs for each of the two LAN ports (connectors) on the rear panel.



- LINK/ACT LEDs

  Each LINK/ACT LED indicates the status of the standard network port of the server. While power is supplied to the server and HUB and the connection is correct, the LED is on (green). The LED turns green and flashes while the network port is transmitting/receiving data.

  If the LED does not go on when the LINK state is placed, check if the network cable is in normal state and if it is connected correctly. If the LED does not go on yet when the network cable is normal, the network (LAN) controller may be faulty. In this case, contact your sales representative.

- Speed LEDs (for data transmission ports)

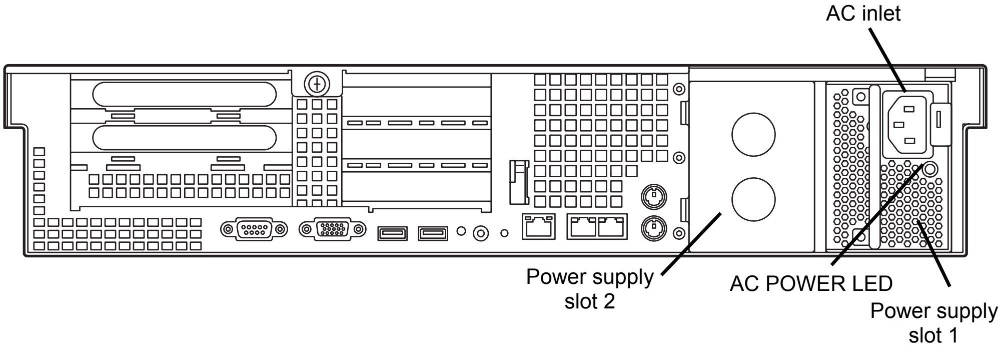
  This LED indicates whether each of the network ports normally equipped with the server is operated through the 1000BASE-T, 100BASE-TX or 10BASE-T network interface. If the LED is lit amber, the network port is operated through 1000BASE-T. If the LED is lit green, the network port is operated through 100BASE-TX. If the LED is off, the network port is operated through 10BASE-T.

- Speed LED (for management port)

  This LED indicates whether each of the network ports normally equipped with the server is operated through the 100BASE-TX or 10BASE-T network interface. If the LED is lit green, the network port is operated through 100BASE-TX. If the LED is off, the network port is operated through 10BASE-T.

AC POWER LEDs

There is an AC POWER LED for the power supply unit on the rear.



The LED turns green and flashes when the power supply unit receives AC power from the power cord, which is connected to the AC inlet. (Flashing amber indicates no AC power is received in any one of two power supplies in the redundant configuration.)

The LED turns green when the server power switch is turned on. If the LED does not go on when the server power switch is turned on or if it turns amber, the power supply unit is probably faulty. In this case, contact your service representative to replace the power supply unit.

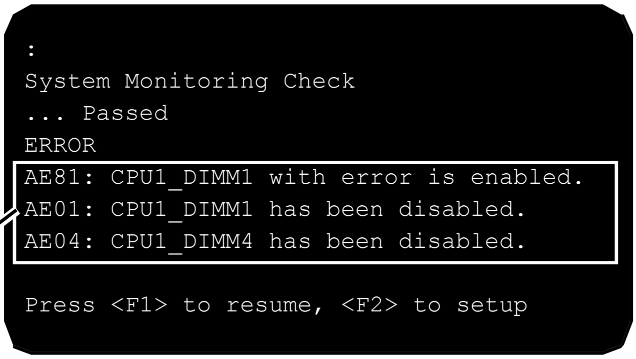
NOTE: When the optional power supply unit is installed, if one power supply unit fails, the other can be used to continue operations (thereby providing redundancy). In addition, hot swapping can be performed (with the power left on) to replace the failed power supply unit without stopping the system.

ERROR MESSAGES

If an error occurs in the server, an error message appears on the display unit connected to the server.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. In addition, depending on the error contents, the computer might beep to report that an error occurred.



```
:
System Monitoring Check
... Passed
ERROR
AE81: CPU1_DIMM1 with error is enabled.
AE01: CPU1_DIMM1 has been disabled.
AE04: CPU1_DIMM4 has been disabled.

Press <F1> to resume, <F2> to setup
```

Messages indicating a memory error (In this example, the messages indicate that CPU1_DIMM1 and CPU1_DIMM4 have failed and been disabled, and that CPU1 and DIMM1 have been forcibly started up.)

The following table lists error messages and actions to take.

IMPORTANT: Write down the messages displayed before contacting your service representative. Alarm messages are useful information for maintenance.

NOTE: The list of POST error messages only contains messages for the server. For details about the BIOS error messages for the SCSI controller card and RAID controller, which are options connected to the motherboard, and the actions to take, see the manuals that come with the options.

Error message after power-on

Displayed Error Message		Description	Recommended Action
8001	Real time clock error	Real-time clock error	Start up the BIOS setup utility, and then specify the correct date and time. If the same error continues to occur, contact your service representative.
8002	Check date and time settings	The real-time clock time setting is incorrect.	
8003	System battery is dead - Replace and run SETUP	There is no system battery.	Contact your service representative to request battery replacement. (After the replacement, start up the BIOS setup utility, and then specify the correct settings.)
8005	Previous boot incomplete - Default configuration used	The last time the system was started up, POST processing did not finish.	Use the BIOS setup utility to specify the correct settings.
8006	System configuration data cleared by Jumper.	The BIOS setup utility settings were cleared using the jumper.	Specify the BIOS setup utility settings again.
8007	SETUP Menu Password cleared by Jumper.	The BIOS setup utility menu password was cleared using the jumper.	Use the BIOS setup utility to specify another password.
8010	Graphics controller was not detected.	No graphics controller was detected.	Contact your service representative.
8800	DXE_NB_ERROR	An error was detected during chip set initialization.	
8801	DXE_NO_CON_IN	An error was detected during console initialization.	
8802	DXE_NO_CON_OUT		
8803	PEI_DXE_CORE_NOT_FOUND	A Flash ROM failure was detected.	
8804	PEI_DXEIPL_NOT_FOUND		
8805	DXE_ARCH_PROTOCOL_NOT_AVAILABLE		
8806	PEI_RESET_NOT_AVAILABLE	The system was not reset correctly.	
8807	DXE_RESET_NOT_AVAILABLE		

Displayed Error Message		Description	Recommended Action
8808	DXE_FLASH_UPDATE_FAILED	The Flash ROM was not written to correctly.	Contact your service representative.
8830	PEI_RECOVERY_NO_CAPSULE	The Flash ROM was not recovered correctly.	
8831	PEI_RECOVERY_PPI_NOT_FOUND		
8832	PEI_RECOVERY_FAILED		
9000	PEI_CPU_NO_MICROCODE	An unsupported CPU was detected.	
9001	Unsupported CPU detected on CPU #1		
9002	Unsupported CPU detected on CPU #2		
9021	Unsupported CPU Speed detected on CPU #1	A CPU running at an unsupported clock speed was detected.	
9022	Unsupported CPU Speed detected on CPU #2		
9040	PEI_CPU_SELF_TEST_FAILED	An error was detected during CPU initialization.	
9060	PEI_CPU_MISMATCH	Different CPUs are installed for CPU #1 and #2.	
9800	GENERIC_CPU_THERMAL_ERROR	A CPU temperature abnormality was detected.	
A001	Memory Error detected in CPU1_DIMM1	An error was detected for CPU1_DIMM1.	
A002	Memory Error detected in CPU1_DIMM2	An error was detected for CPU1_DIMM2.	
A003	Memory Error detected in CPU1_DIMM3	An error was detected for CPU1_DIMM3.	
A004	Memory Error detected in CPU1_DIMM4	An error was detected for CPU1_DIMM4.	
A005	Memory Error detected in CPU1_DIMM5	An error was detected for CPU1_DIMM5.	
A006	Memory Error detected in CPU1_DIMM6	An error was detected for CPU1_DIMM6.	
A007	Memory Error detected in CPU2_DIMM1	An error was detected for CPU2_DIMM1.	
A008	Memory Error detected in CPU2_DIMM2	An error was detected for CPU2_DIMM2.	
A009	Memory Error detected in CPU2_DIMM3	An error was detected for CPU2_DIMM3.	
A00A	Memory Error detected in CPU2_DIMM4	An error was detected for CPU2_DIMM4.	
A00B	Memory Error detected in CPU2_DIMM5	An error was detected for CPU2_DIMM5.	
A00C	Memory Error detected in CPU2_DIMM6	An error was detected for CPU2_DIMM6.	

Displayed Error Message		Description	Recommended Action
AE01	CPU1_DIMM1 has been disabled.	A memory error was detected. CPU1_DIMM1 has been disabled.	Contact your service representative.
AE02	CPU1_DIMM2 has been disabled.	A memory error was detected. CPU1_DIMM2 has been disabled.	
AE03	CPU1_DIMM3 has been disabled.	A memory error was detected. CPU1_DIMM3 has been disabled.	
AE04	CPU1_DIMM4 has been disabled.	A memory error was detected. CPU1_DIMM4 has been disabled.	
AE05	CPU1_DIMM5 has been disabled.	A memory error was detected. CPU1_DIMM5 has been disabled.	
AE06	CPU1_DIMM6 has been disabled.	A memory error was detected. CPU1_DIMM6 has been disabled.	
AE07	CPU2_DIMM1 has been disabled.	A memory error was detected. CPU2_DIMM1 has been disabled.	
AE08	CPU2_DIMM2 has been disabled.	A memory error was detected. CPU2_DIMM2 has been disabled.	
AE09	CPU2_DIMM3 has been disabled.	A memory error was detected. CPU2_DIMM3 has been disabled.	
AE0A	CPU2_DIMM4 has been disabled.	A memory error was detected. CPU2_DIMM4 has been disabled.	
AE0B	CPU2_DIMM5 has been disabled.	A memory error was detected. CPU2_DIMM5 has been disabled.	
AE0C	CPU2_DIMM6 has been disabled.	A memory error was detected. CPU2_DIMM6 has been disabled.	
AE81	CPU1_DIMM1 with error enabled.	CPU1_DIMM1 was disabled, but, because all memory is currently disabled, this DIMM was forcibly enabled.	
AE82	CPU1_DIMM2 with error enabled.	CPU1_DIMM2 was disabled, but, because all memory is currently disabled, this DIMM was forcibly enabled.	

Displayed Error Message		Description	Recommended Action
AE83	CPU1_DIMM3 with error enabled.	CPU1_DIMM3 was disabled, but, because all memory is currently disabled, this DIMM was forcibly enabled.	Contact your service representative.
AE87	CPU2_DIMM1 with error enabled.	CPU2_DIMM1 was disabled, but, because all memory is currently disabled, this DIMM was forcibly enabled.	
AE88	CPU2_DIMM2 with error enabled.	CPU2_DIMM2 was disabled, but, because all memory is currently disabled, this DIMM was forcibly enabled.	
AE89	CPU2_DIMM3 with error enabled.	CPU2_DIMM3 was disabled, but, because all memory is currently disabled, this DIMM was forcibly enabled.	
B000	DXE_LEGACY_OPROM_NO_SPACE	There is no space for expanding option ROM.	If the board is not used as a boot device, disable the Option ROM Scan for that board.
B001	Expansion ROM not initialized - PCI Slot 1B	Option ROM expansion in PCI slot 1B failed.	
B002	Expansion ROM not initialized - PCI Slot 2B	Option ROM expansion in PCI slot 2B failed.	
B003	Expansion ROM not initialized - PCI Slot 3B	Option ROM expansion in PCI slot 3B failed.	
B004	Expansion ROM not initialized - PCI Slot 1C	Option ROM expansion in PCI slot 1C failed.	
B005	Expansion ROM not initialized - PCI Slot 2C	Option ROM expansion in PCI slot 2C failed.	
B006	Expansion ROM not initialized - PCI Slot 3C	Option ROM expansion in PCI slot 3C failed.	
B030	PCI System Error on Bus/Device/Function	PCI SERR was detected.	Contact your service representative.
B040	PCI Parity Error on Bus/Device/Function	PCI PERR was detected.	
C010	The error occurred during temperature sensor reading	An error was detected while reading the temperature sensor.	
C011	System Temperature out of the range.	A temperature abnormality was detected.	It is possible that a fan has failed or is clogged up. Contact your service representative and request repairs.
C020	The error occurred during voltage sensor reading.	An error was detected while reading the voltage sensor.	Contact your service representative.

Displayed Error Message	Description	Recommended Action
C021 System Voltage out of the range.	A system voltage abnormality was detected.	Contact your service representative.
C040 SROM data read error	SROM data reading error	
C041 SROM data checksm bad	SROM data checksum error	
C060 SMBus device Error detected.	An error was detected for the SM Bus.	
C061 1st SMBus device Error detected.	An error was detected for the 1st SM Bus.	
C062 2nd SMBus device Error detected.	An error was detected for the 2nd SM Bus.	
C063 3rd SMBus device Error detected.	An error was detected for the 3rd SM Bus.	
C064 4th SMBus device Error detected.	An error was detected for the 4th SM Bus.	
C065 5th SMBus device Error detected.	An error was detected for the 5th SM Bus.	
C066 6th SMBus device Error detected.	An error was detected for the 6th SM Bus.	
C101 BMC Memory Test Failed.	BMC device (chip) error	Turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C102 BMC Firmware Code Area CRC check failed.		
C103 BMC core hardware failure.		
C104 BMC IBF or OBF check failed.	Accessing the BMC address failed.	
C105 BMC SEL area full.	There is not enough capacity to write the system event log.	Start up the BIOS setup utility, select [Clear All Error Logs] under [Event Log Configuration] on the [Server] menu, and then press the **Enter** key to delete the logs.

Displayed Error Message		Description	Recommended Action
C106	BMC set in progress monitoring timeout.	The BMC check was interrupted.	Turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C107	BMC command access failed.	BMC command access failed.	
C108	Could not redirect the console - BMC Busy -	Console redirection was not possible (BMC busy).	
C109	Could not redirect the console - BMC Error -	Console redirection was not possible (BMC error).	
C10A	Could not redirect the console - BMC Parameter Error -	Console redirection was not possible (BMC parameter error).	
C10B	BMC Platform Information Area corrupted.	BMC device (chip) error	
C10C	BMC update firmware corrupted.		
C10D	Internal Use Area of BMC FRU corrupted.	Failure of the SROM for storing chassis information	This is not a fatal error, but turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C10E	BMC SDR Repository empty.	BMC device (chip) error	Turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C10F	IPMB signal lines do not respond.	SMC (Satellite Management Controller) failure	This is not a fatal error, but turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C110	BMC FRU device failure.	Failure of the SROM for storing chassis information	This is not a fatal error, but turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.

Displayed Error Message		Description	Recommended Action
C111	BMC SDR Repository failure.	Failure of the SROM for storing sensor data record information	Turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C112	BMC SEL device failure.	BMC device (chip) failure	
C113	BMC RAM test error.	BMC RAM error	
C114	BMC Fatal hardware error.	BMC error	
C115	Management controller not responding	BMC error	Upload the RMC firmware. If this does not resolve the problem, contact your service representative.
C116	Private I2C bus not responding.	Private I2C bus not responding	Turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C117	BMC internal exception	BMC error	
C118	BMC A/D timeout error.	BMC error	
C119	SDR repository corrupt.	BMC error or SDR data corruption	
C11A	SEL corrupt.	BMC error or system event log data corruption	
C200	The error occurred during memory configuration check.	The memory information could not be obtained.	
C201	Memory Configuration change is detected.	The memory configuration has changed since the previous startup.	This message appears if the configuration was changed since the previous startup. If this message appears even no configuration change has been made, contact your service representative.
C202	The error occurred during CPU configuration check.	The CPU information could not be obtained.	Turn off the power, and then restart the server. If this does not resolve the problem, contact your service representative.
C203	CPU Configuration change is detected.	The CPU configuration has changed since the previous startup.	This message appears if the configuration was changed since the previous startup. If this message appears even no configuration change has been made, contact your service representative.

Messages displayed by RAID Controller during POST

On-screen message	**Action**
Memory/battery problems were detected. The adapter has recovered, but cached data was lost. Press any key to continue, or 'C' to load the configuration utility.	Contact your service representative.
Firmware version inconsistency was detected. The adapter has recovered, but cached data was lost. Press any key to continue, or 'C' to load the configuration utility.	Contact your service representative.
Foreign configuration(s) found on adapter Press any key to continue, or 'C' to load the configuration utility.	Press **C** to run the utility to import or clear configuration.
Previous configuration cleared or missing Importing configuration created on MM/DD hh:mm Press any key to continue, or 'C' to load the configuration utility.	Contact your service representative.
An enclosure was found that contains both SAS and SATA drives, but this controller does not allow mixed drive types in a single enclosure. Please correct the problem then restart your system. Press any key to continue, or 'C' to load the configuration utility.	RAID Controller may be faulty. Contact your service representative to replace the RAID controller.
SAS drives were detected, but this controller does not support SAS drives. Please remove the SAS drives then restart your system. Press any key to continue, or 'C' to load the configuration utility.	RAID Controller may be faulty. Contact your service representative to replace the RAID controller.
SATA drives were detected, but this controller does not support SATA drives. Please remove the SATA drives then restart your system. Press any key to continue, or 'C' to load the configuration utility.	RAID Controller may be faulty. Contact your service representative to replace the RAID controller.
Invalid SAS topology detected. Please check your cable configurations, repair the problem, and restart your system.	Check if cable is connected properly. If the same error persists, contact your service representative.
The battery hardware is missing or malfunctioning, or the battery is unplugged. If you continue to boot the system, the battery-backed cache will not function. Please contact technical support for assistance. Press 'D' to disable this warning (if your controller does not have a battery).	<When battery is not used> Press **D** to hide this message. <When battery is used> Check if battery is connected properly. If the same error persists, contact your service representative.

On-screen message	Action
Your VDs that are configured for write-back are temporarily running in write-through mode. This is caused by the battery being charged, missing, or bad. Please allow battery to charge for 24 hours before evaluating battery for replacement. The following VDs are affected :XX Press any key to continue.	<When battery is not used> Ignore this message. <When battery is used> Run WebBIOS or Universal RAID Utility to check if battery is detected. • Battery is not detected: – Check if battery is connected properly. – Battery may be insufficiently charged. Halt the system for 24 hours or longer and charge battery. • Battery is detected: – Halt the system for 9 hours or longer and charge battery. If the same error persists, contact your service representative.
Invalid SAS Address present in MFC data. Please program valid SAS Address, and restart your system.	Contact your service representative.
Some configured disks have been removed from your system, or are no longer accessible. Please check your cables and also ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	Check if cable and hard disk drives are connected properly. If the same error persists, contact your service representative.
The following VDs have missing disks: xx If you proceed (or load the configuration utility), these VDs will be marked OFFLINE and will be inaccessible. Please check your cables and ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	
The following VDs are missing: xx If you proceed (or load the configuration utility), these VDs will be removed from your configuration. If you wish to use them at a later time, they will have to be imported. If you believe these VDs should be present, please power off your system and check your cables to ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	
All of the disks from your previous configuration are gone. If this is an unexpected message, then please power off your system and check your cables to ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	

On-screen message	Action
The cache contains dirty data, but some VDs are missing or will go offline, so the cached data can not be written to disk. If this is an unexpected error, then please power off your system and check your cables to ensure all disks are present. If you continue, the data in cache will be permanently discarded. Press 'X' to acknowledge and permanently destroy the cached data.	Check if cable, hard disk drives, and upgrade kit are connected properly. If the same error persists, contact your service representative. NOTE: If you press **X**, the data in cache memory will be lost.
Invalid memory configuration detected. Please contact your system support. System has halted.	Contact your service representative to replace the RAID controller.
RAID Adapter FW Failed Validation!!! Adapter needs to be reflashed. Press any key to continue.	Contact your service representative to replace the RAID controller.
Cache data was lost due to an unexpected power-off or reboot during a write operation, but the adapter has recovered. This could be due to memory problems, bad battery, or you may not have a battery installed. Press any key to continue or 'C' to load the configuration utility.	<When battery is not used> Run WebBIOS or Universal RAID Utility to check the setting for cache mode. If forced write-back is specified, change it to constant write back or write through mode. <When battery is used> Check if battery is connected properly. If the same error persists, contact your service representative to replace the RAID controller and battery.
Entering the configuration utility in this state will result in drive configuration changes. Press 'Y' to continue loading the configuration utility or please power off your system and check your cables to ensure all disks are present and reboot.	Contact your service representative to replace the RAID controller.
Multibit ECC errors were detected on the controller. DIMM on the controller needs replacement. If you continue, data corruption can occur. Press 'X' to continue or else power off the system and replace the DIMM module and reboot. If you have replaced the DIMM please press 'X' to continue.	Contact your service representative to replace the RAID controller.
Multiple Single-bit ECC errors were detected during the previous boot of the controller. DIMM on the controller needs replacement. If you continue, data corruption can occur. Press 'X' to continue or else power off the system and replace the DIMM module and reboot. If you have replaced the DIMM please press 'X' to continue.	Contact your service representative to replace the RAID controller.

On-screen message	Action
Single-bit overflow ECC errors were detected during the previous boot of the controller. DIMM on the controller needs replacement. If you continue, data corruption can occur. Press 'X' to continue or else power off the system and replace the DIMM module and reboot. If you have replaced the DIMM please press 'X' to continue.	Contact your service representative to replace the RAID controller.

Beep Codes

If an error occurs during the POST, the server beeps, indicating the type of error.

Each number indicates the number of short beeps, and a hyphen indicates a pause. For example, the beep interval 1-3-3-1 indicates 1 beep, a pause, 3 beeps, a pause, 3 beeps, a pause, and 1 beep, which indicates that an error occurred while checking the memory capacity.

Beep code	Description	Recommended action
1-3-3-1	No memory could be detected. An error occurred during a memory capacity check.	Make sure that the DIMMs are correctly inserted. If this does not resolve the problem, contact your service representative and request either DIMM or motherboard replacement.
1-1	No graphics controller could be detected.	Contact your service representative and request motherboard replacement.
1	An error was detected during the POST processing or DIMM has already been installed.	Contact your service representative and request motherboard replacement.
3	Failed to read the BIOS executable module. Or, BIOS has no executable module.	
4	Failed to initialize the BIOS executable module.	
7	Failed to reset the system.	

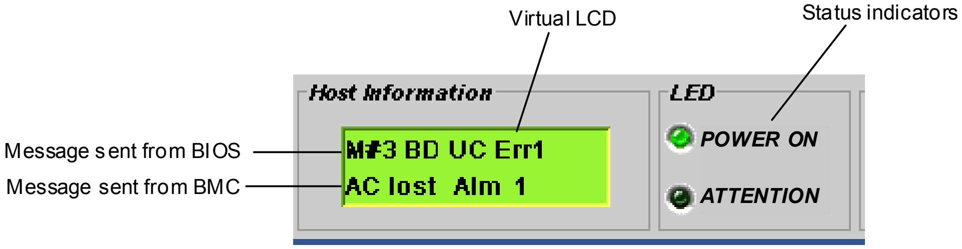
Error messages on virtual LCD

NEC EXPRESSSCOPE Engine 2 (Remote Management Controller), which is on your server board, allows you to monitor the server status from a Web browser running on a client PC via a network.

The virtual LCD (16 digits x 2 lines) in the "Host Information" area displays the POST codes and status message.

When POST detects an error, the POST error code is displayed on the virtual LCD upon completion of POST. See the table for POST error codes for details.

Example:



```
M#3 BD UC Err1
AC lost  Alm 1
```

● Messages displayed on top line (BIOS messages)

On-screen message	Description	Action
XX BIOS Rev YYYY	POST in progress. XX: POST code, YYYY: BIOS version	Wait until POST completes.
Prepare To Boot	POST completes normally.	Wait until booting up completes.
CPU1_DIMM C-Err	A correctable error occurred on one of CPU1_DIMMs.	The error was corrected. You may continue operating the server.
CPU2_DIMM C-Err	A correctable error occurred on one of CPU2_DIMMs.	
Mem Err Disable	A correctable memory error frequently occurred.	Contact your service representative.
Mem Reconfigured	The system is running with memory degraded.	
PCI Bus SERR XX	A SERR has occurred in the PCI bus XX.	
PCI Bus PERR XX	A PERR has occurred in the PCI bus XX.	

● Messages displayed on bottom line (BMC messages)

On-screen message	Description	Action
Proc1 VccpAlm XX	A voltage abnormality was detected. XX = 09: Upper limit abnormality XX = 02: Lower limit abnormality A voltage abnormality at the warning level was detected: XX = 07: Upper limit warning XX = 00: Lower limit warning	Contact your service representative.
Proc2 VccpAlm XX		
Proc1PVtt Alm XX		
Proc2PVtt Alm XX		
Proc1 1.5v Alm XX		
Proc2 1.5v Alm XX		
BB 1.0vsb Alm XX		
BB 1.1v Alm XX		
BB 1.2vsb Alm XX		
BB +1.5v Alm XX		
BB +1.8v Alm XX		
BB 1.8vsb Alm XX		
BB +3.3v Alm XX		
BB 3.3vsb Alm XX		
BB +5.0v Alm XX		
BB 5vsb Alm XX		
BB +12v Alm XX		
VBAT Alm XX		
BB Temp1 Alm XX	A temperature abnormality was detected. XX = 09: High temperature abnormality XX = 02: Low temperature abnormality A temperature abnormality at the warning level was detected: XX = 07: High temperature warning XX = 00: Low temperature warning	It is possible that a fan has failed or is clogged up. Contact your service representative and request repairs.
FP Temp Alm XX		
Proc1 Therm % XX		
Proc2 Therm % XX		
CPU1_DIMM1 Temp XX		
CPU1_DIMM2 Temp XX		
CPU1_DIMM3 Temp XX		
CPU1_DIMM4 Temp XX		
CPU1_DIMM5 Temp XX		
CPU1_DIMM6 Temp XX		
CPU2_DIMM1 Temp XX		
CPU2_DIMM2 Temp XX		
CPU2_DIMM3 Temp XX		
CPU2_DIMM4 Temp XX		
CPU2_DIMM5 Temp XX		
CPU2_DIMM6 Temp XX		
DUMP Request !	The dump button was pressed.	Wait until collecting the memory dump data has finished.
OS shutdown Alm	An OS stop error was detected.	Record the displayed message, wait until collecting the memory dump data has finished, and then contact your service representative and request repairs.
Power Unit 1 Alm	A power supply unit 1 abnormality occurred.	Make sure that the power cord is plugged in. If this does not resolve the problem, contact your service representative and request repairs.
Power Unit 2 Alm	A power supply unit 2 abnormality occurred.	
Proc Missing	No CPU is installed.	Contact your service representative and request CPU or motherboard replacement.

On-screen message	Description	Action
Proc1 T-Trip	The power was forcibly turned off due to a CPU1 temperature abnormality.	Contact your service representative.
Proc2 T-Trip	The power was forcibly turned off due to a CPU2 temperature abnormality.	
ChipSet T-Trip	The power was forcibly turned off due to a chip set temperature abnormality.	
CPU1_DIMM U-Err	An unrecoverable error occurred for a CPU1 DIMM.	
CPU2_DIMM U-Err	An unrecoverable error occurred for a CPU2 DIMM.	
Processor1 IERR	An internal CPU1 error (IERR) occurred.	
Processor2 IERR	An internal CPU2 error (IERR) occurred.	
SMI timeout	A timeout occurred while servicing system management interrupts.	
WDT timeout	A watchdog timer timeout occurred.	
HDD 1 Fault	Operation was performed while the hard disk drive had a failed status (supported only when the onboard RAID controller (N8103-129/130) is used). HDD 7 Fault and HDD 8 Fault only apply to 2.5-inch hard disk drive models. * These apply to 2.5-inch HDD models to which N8154-35 has been added.	
HDD 2 Fault		
HDD 3 Fault		
HDD 4 Fault		
HDD 5 Fault		
HDD 6 Fault		
HDD 7 Fault		
HDD 8 Fault		
HDD 9 Fault*		
HDD 10 Fault*		
HDD 11 Fault*		
HDD 12 Fault*		
Sys Fan 1R Alarm	A fan alarm was detected.	It is possible that a fan has failed or is clogged up. Contact your service representative and request repairs.
Sys Fan 2R Alarm		
Sys Fan 3R Alarm		
Sys Fan 4R Alarm		
Sys Fan 1F Alarm		
Sys Fan 2F Alarm		
Sys Fan 3F Alarm		
Sys Fan 4F Alarm		

SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

Problems with NEC Express Server

No screen display appears and beep occurs:

☐ Is the DIMM board installed securely?

→ Check whether the DIMM board is inserted into the mating connector securely.

→ Make sure the jumper switches have been returned to their original positions after CMOS clearing. See "Configuring Mother Board Jumpers" in Chapter 4 for the positions of the jumper switches.

Fail to power on the server:

☐ Is the server is properly supplied with power?

→ Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.

→ Check the power cord for broken shield or bent plugs.

→ Make sure the power breaker for the connected power outlet is on.

→ If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. See the manual that comes with the UPS for details.

Power supply to the server may be linked with the connected UPS using the BIOS Setup utility of the server.

<Menu to check: [Advanced] - [AC-LINK]>

☐ Did you press the POWER/SLEEP switch?

→ Press the POWER/SLEEP switch on the front of the server to turn on the power (the POWER/SLEEP lamp lights).

POST fails to complete:

☐ Is the DIMM board installed?

→ Check the installation location of DIMMs (see Chapter 9).

☐ Is the memory size large?

→ The memory check may take a few seconds if the memory size is large. Wait for a while.

☐ Did you perform any keyboard or mouse operation immediately after you started the server?

→ If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

☐ Does the server have contains appropriate memory boards or PCI devices?

→ Operation of the server with unauthorized devices is not guaranteed.

Fail to access to internal or external devices (or such devices fail to operate):

☐ Are cables properly connected?

→ Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

☐ Is the power-on order correct?

→ When the server has any external devices connected, power on the external devices first, then the server.

☐ Did you install drivers for connected optional devices?

→ Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

☐ Is BIOS configuration correct?

→ Some devices connected to the serial or parallel port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.

The keyboard or mouse fails to operate:

- ☐ Is the cable properly connected?
  - → Make sure that the cable is connected to the correct connector on the rear of the server.
  - → The keyboard or mouse does not operate if it is connected when the server is powered (not applicable to USB devices). Power of the server first and connect it properly.
- ☐ Are the server drivers installed?
  - → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

Fail to access to the DVD/CD-ROM:

- ☐ Is the DVD/CD-ROM properly set in the optical disk drive tray?
  - → The tray is provided with a holder to secure the DVD/CD-ROM. Make sure that the DVD/CD-ROM is placed properly in the holder.
- ☐ Is the DVD/CD-ROM applicable to the server?
  - → The DVD/CD-ROM for Macintosh is not available for use.
  - → For the disk which does not conform to the CD standard, the playback of such a disk with the optical disk drive is not guaranteed.

The POWER/SLEEP lamp goes on when the power cord is connected:

→ When the server receives an AC power after the power cord is connected, the POWER/SLEEP lamp goes on. This is a normal operation of the server, not a fault. The lamp will go off when DC power is turned on, and then off.

Inserted the correct DVD/CD-ROM but the message like the following is displayed:

```
The DVD/CD-ROM is not inserted or the wrong DVD/CD-ROM is inserted.
Please insert the correct DVD/CD-ROM.
OK
```

- ☐ Is the data side of the DVD/CD-ROM dirty or injured?
  - → Take the DVD/CD-ROM out of the optical disk drive, confirm that it is not dirty or injured, reset and click [OK].

Fail to access the hard disk drive:

(Refer to the documentation supplied with the RAID Controller.)

- ☐ Is the hard disk drive applicable to the server?

  → Operation of any device that is not authorized by NEC is not guaranteed.

- ☐ Is the hard disk drive properly installed?

  → See Chapter 9.

Fail to access the (internal or external) SCSI devices:

- ☐ Is the SCSI device applicable to the server?

  → Operation of any SCSI device that is not authorized by NEC is not guaranteed.

- ☐ Is the cable connection changed?

  → See Chapter 10 for cable connection.

- ☐ Are SCSI devices properly configured?

  → When the server has external SCSI devices connected, hard disk drive settings, including SCSI ID and terminator, are required. Refer to the manual that comes with the SCSI device for details.

- ☐ Is cable length exceeded?

  → Refer to the manual that comes with the SCSI device for details.

- ☐ Are the optional SCSI controllers properly configured?

  → Use the BIOS Setup utility for proper configuration of SCSI devices connected to the SCSI connector on the mother board. When the server has an optional SCSI controller installed and SCSI devices connected to it, use the BIOS Setup utility that comes with the optional SCSI controller for proper configuration. See the manual that comes with the optional SCSI controller for details.

Event logs in using Intel Network adapter teaming

Event Type: Warning
Event Source: iANSMiniport
Event Category: None
Event ID: 11
Description: Adapter link down:Intel(R) ----

Event Type: Warning
Event Source: iANSMiniport
Event Category: None
Event ID: 13
Description: Intel(R) ---- has been deactivated from the team.

Event Type: Error
Event Source: iANSMiniport
Event Category: None
Event ID: 16
Description: Team Name : The last adapter has lost link.
Team network connection has been lost.

Event Type: Warning
Event Source: iANSMiniport
Event Category: None
Event ID: 22
Description: Primary Adapter does not sense any Probes:
Intel(R) ---- Possible reason: partitioned Team.

→ Above-mentioned event log will appear when the system starts.
There is no problem in LAN driver operation.

Problems with Windows

The following warnings are logged when you start Windows Server 2008 R2:

Event ID: 27

Source: e1qexpress

Level: Warning

Description: Intel(R) 82576 Gigabit Dual Port Server Network ...
Network link has been disconnected.

→ If the above event is logged when you start the system, this event does not affect system operation. Ignore this message.

Event ID: 63

Source: Microsoft-Windows-WMI

Level: Warning

Description: A provider, Ncs2, has been registered in the Windows Management Instrumentation namespace Root\IntelNCS2 to use the LocalSystem account.
This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

→ This event does not affect system operation. Ignore this message.

The following system event is logged when Windows Server 2008 R2 is installed:

Event ID: 134

Source: Microsoft-Windows-Time-Service

Level: Warning

Description: NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on ''.
NtpClient will try again in 3473457 minutes and double the reattempt interval thereafter.
The error was: No such host is known. (0x80072AF9)

→ This event does not affect system operation. Ignore this message.

The following application event is logged when Windows Server 2008 R2 is installed:

Event ID:	1534
Source:	Microsoft-Windows-User Profiles Service
Level:	Warning
Description:	Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed, error code is The revision level is unknown.

→ This event does not affect system operation. Ignore this message.

The following system event is logged when I use the system:

Event ID:	1
Source:	iScsiPrt
Level:	Error
Description:	Initiator failed to connect to the target. Target IP address and TCP Port number are given in dump data.

→ Go to the Microsoft website:
http://support.microsoft.com/default.aspx/kb/976072/en-us

The following warnings are logged to application event log when you import a transportable shadow-copy to another server that has a read-only volume while operating Windows Server 2008 R2:

Event ID:	8193
Source:	VSS
Level:	Error
Description:	Volume Shadow Copy Service error: Unexpected error calling routine IOCTL_DISK_GET_DRIVE_LAYOUT_EX(\\?\mpio#disk&ven_nec&prod_istorage_2000&rev_2800#1&7f6ac24&0&303030303030303933313030303735373030323934#{ *GUID* }) - BuildLunInfoForDrive. hr = 0x80070013, This media is write-protected.

Event ID:	12289
Source:	VSS
Level:	Error
Description:	Volume Shadow Copy Service error: Unexpected error DeviceIoControl(\\?\storage#volume#{ *GUID* }#0000000000010000#{ *GUID* } - 00000000000002B8,0x00560000,0000000000000000,0,00000000002BE0C0,4096,[0]). hr = 0x80070013, This media is write-protected.

→ Go to the Microsoft website:
http://support.microsoft.com/kb/2003016/en-us

The following warnings are logged to application event log when I import a transportable shadow-copy to another server that has a floppy disk drive while operating Windows Server 2008 R2:

Event ID: 12289
Source: VSS
Level: Error
Description: Volume shadow copy service error: unexpected error

DeviceIoControl (\\? # 6 \usbstor#sfloppy &ven_teac&prod_fd-05pub &rev_3000 & 158e20d0 & 0 # { *GUID* }-0000000000002B8, 0x00560000, 0000000000000000, 0, 0000000000327C70,4096, [0]). HR = 0x80070032, this request is not supported.

→ Go to the Microsoft website:
http://support.microsoft.com/kb/2003968/en-us

There is the case that the following message is displayed at the time of shutdown when you executes "Updating the system" in Windows Server 2008 R2:

1 program still needs to close: (Waiting for) Task Host Window

→ This event does not affect system operation.
Ignore this message. For more details, see
http://support.microsoft.com/kb/975777/en-us

The following system events are logged when Windows Server 2008 is installed:

Event ID: 134
Source: Microsoft-Windows-Time-Service
Level: Warning
Description: NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on 'time.windows.com,0x9'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter.
The error was: No such host is known. (0x80072AF9)

Event ID: 263
Source: PlugPlayManager
Level: Warning
Description: The service 'ShellHWDetection' may not have unregistered for device event notifications before it was stopped.

Event ID: 7000
Source: Service Control Manager
Level: Error
Description: The Parallel port driver service failed to start due to the following error:
The service cannot be started, either because it is disabled or because it has no enabled devices associated with it.

Event ID: 15016
Source: Microsoft-Windows-Http
Level: Error
Description: Unable to initialize the security package Kerberos for server side authentication. The data field contains the error number.

→ These events do not affect system operation. Ignore these messages.

The following application events are logged when Windows Server 2008 is installed:

Event ID: 63
Source: Microsoft-Windows-WMI
Level: Warning
Description: A provider, Ncs2, has been registered in the Windows Management Instrumentation namespace Root\cimv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

A provider, IntelEthernetDiag, has been registered in the Windows Management Instrumentation namespace Root\CIMv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

A provider, WmiPerfClass, has been registered in the Windows Management Instrumentation namespace root\cimv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

Event ID: 6000
Source: Microsoft-Windows-Winlogon
Level: Warning
Description: The winlogon notification subscriber <GPClient> was unavailable to handle a notification event.

Event ID: 6001
Source: Microsoft-Windows-Winlogon
Level: Warning
Description: The winlogon notification subscriber <GPClient> failed a notification event.

→ These events do not affect system operation. Ignore these messages.

The following system event is logged when Windows Server 2008 is installed:

Event ID: 10
Source: VDS Dynamic Provider
Description: The provider failed while storing notifications from the driver.
The Virtual Disk Service should be restarted. hr=80042505

→ Go to the Microsoft website:
http://support.microsoft.com/kb/948275/en-us/

The following application events are logged when Windows Server 2008 is installed:

Event ID: 1021
Source: Microsoft-Windows-Security-Licensing-SLC
Level: Warning
Description: SLUINotify service has failed to start. hr=0x80070424

Event ID: 1534
Source: Microsoft-Windows-User Profiles Service
Level: Warning
Description: Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed, error code is -2147023591.

→ These events do not affect system operation. Ignore these messages.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions:

Source: DCOM
Category: Error
Event ID: 10016
Description: The application-specific permission settings do not grant Local Activation permission for the COM server application with CLSID {555F3418-D99E-4E51-800A-6E89CFD8B1D7} to the user {NT AUTHORITY\LOCAL SERVICE} SID {S-1-5-19}.
This security permission can be modified using the component Services administrative tool.

→ It is not a problem in operating the system.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions:

Event Source: Service Control Manager
Event Type: Error
Event ID: 7011
Description: Timeout (30000 milliseconds) waiting for a transaction response from the IMAP4Svc service.

→ When this event is not registered by restarting the system, it is not a problem in operating the system.

Installed Service Pack before application of Windows Server 2003 R2 DISC 2 during Windows Server 2003 R2 installation:

→ Apply Windows Server 2003 R2 DISC 2, and then install Service Pack again by "Updating the System".

There are some cases that an event log is registered as follows when you operate Windows Server 2003 R2:

Source: IPMIDRV

Type: Error

Event ID: 1001

Description: The IPMI device driver attempted to determine if the system supported an IPMI BMC device. The driver attempted to detect the presence of the IPMI BMC by searching the SMBIOS for Type 38 record. But either no record was found or the record was not compatible with the version of the device driver.
If a SMBIOS Type 38 record was detected, the Dump Data field of the event contains a binary representation of the record.

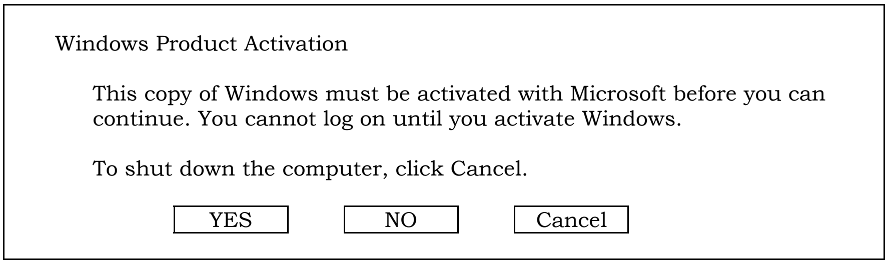
→ If you use "Hardware Management" which is provided by Windows Server 2003 R2, above-shown event log will be registered.

For more details, refer to "Enabling Microsoft Windows Server 2003 R2 Hardware Management" on the following site.

[NEC Express5800 Web Site]

http://www.nec.co.jp/express/download/W2K3_R2

The system displays the message below and fails to log on:



Windows Product Activation

This copy of Windows must be activated with Microsoft before you can continue. You cannot log on until you activate Windows.

To shut down the computer, click Cancel.

→ In Windows Server 2003, the above message will be displayed if you use the operating system without executing the license authentication. Select "Yes", and execute the procedure for license authentication.

Cannot install the operating system correctly:

☐ Did you confirm the notes on installing the operating system?

→ See Chapter 6.

Fail to start the OS with the /3GB switch

→ System often fails to start the OS with the /3GB switch.

In this case, please adjust the capacity of the user mode area using the /userva switch in reference to the following URL.

http://support.microsoft.com/kb/316739/en

During installation, the following warning is registered in the System Log of the Event Viewer:

```
Error detected on the device \Device\CdRom0
during the paging operation.
```

→ There is no problem on this issue.

Fail to start the OS:

☐ Is a floppy disk in the floppy disk drive?

→ Take out the floppy disk and restart the server.

☐ Is the NEC EXPRESSBUILDER DVD-ROM in the optical disk drive?

→ Take out the NEC EXPRESSBUILDER DVD-ROM and restart the server.

☐ Is the OS broken?

→ Use recovery process to recover the system.

The OS presents unstable operation:

☐ Did you update the system?

→ Installing a network drive after installation of the OS may cause unstable operation. Use the NEC EXPRESSBUILDER DVD-ROM to update the system. (See Chapter 6.)

The system does not restart automatically when a stop error occurs, though the system is adjusted to automatically restarting:

→ When the system does not restart automatically, restart it manually.

The system restarts automatically when a stop error occurs, though the system is NOT adjusted to automatically restarting:

→ There is no problem about this issue.
Check the System Event Log to confirm that STOP error occurred.

Cannot turn the power OFF at the blue screen:

→ If you want to turn off the power at the blue screen, execute forced shutdown (forced shutdown: continue to press POWER/SLEEP switch for 4 seconds). The power will not be turned off if you press the switch for less than 3 seconds.

The PXE boot (network boot) fails or the server is not found on the network:

☐ Is the cable connected properly?

→ Connect the proper cable to the network port on the rear of the Express server. In addition, make sure that the used cable conforms to the network interface standard.

☐ Is BIOS configuration correct?

→ The internal LAN controller may be disabled with the BIOS SETUP utility of the server. Check the setting with the BIOS setup utility.

☐ Have the protocol and service already configured?

→ Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

☐ Is the transfer speed correct?

→ Open the network property dialog box in control panel to specify the link speed and duplex value the same as the value specified for HUB.

The Telnet Service is not installed:

→ Adjust the computer name to 14 characters or less, and then install the Telnet Service according to <How to install the Telnet Service>.

<How to install the Telnet Service>

1. Click [Run] on Start menu.
2. Type "tlntsvr /service" in the [Open] box, and click [OK].
3. Click Start menu, point to [Control Panel] and click [Computer Management] and then click the [Services] to specify whether the Telnet Service is registered.

   * When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

Power ON/OFF (Wake On LAN) feature does not work:

→ Immediately after the AC power is turned on, the Remote Power ON/OFF feature (Wake ON LAN) is disabled. Start Windows Server 2003 once, provide settings as shown below, then shutdown the system. After restart, the Remote Power On/Off feature is available unless the AC power is turned off.
Select [Start] → [Administrative Tools] → [Computer Management].
Select Device Manager, double-click [Intel(R) PRO/1000EB Network Connection with I/O Acceleration #n] under Network Adapter, and specify as follows in [Detail] tab.

PME:	[ON]
Wake On:	[Magic Packet]

The system time lags:

→ If you do not use the server that adjust time such as NTP (Network Time Protocol) Server, the system time may differ from actual time.
In this case, use NTP server or disable "Windows Time Service".

Problems with RAID System Configuration

Fail to install the OS:

☐ Did you create a configuration file?

→ Create a configuration file by using the configuration utility.

Fail to start the OS:

☐ Is RAID controller inserted firmly straight into the PCI slot?

→ Install the RAID controller properly.

☐ Is the RAID controller installed in the proper slot?

→ Check if the slot is appropriate to the RAID controller. If the same error persists, the RAID controller may be faulty. Contact your service representative.

☐ Are hard disk drives properly installed?

→ Install them properly.

☐ Is SAS cable connected correctly? (Check connection status with the server, hard disk drives, and additional disk cage.)

→ Connect the SAS cable properly.

If the same error persists, the hard disk drive may be faulty. Contact your service representative.

A hard disk drive fails:

→ Contact your service representative.

Rebuild fails:

☐ Is the capacity of the hard disk drive to be rebuilt sufficient?

→ The hard disk drive to be rebuilt should have the same capacity of the failed had disk drive.

☐ Is RAID0 configured for virtual disk?

→ RAID0 has no data redundancy, therefore, Rebuild is disabled in the RAID0 configuration. Replace the failed hard disk drive, then create the virtual disk again.

Check Consistency fails:

☐ Is virtual disk "Degraded"?

→ Replace the failed hard disk drive with new one, then perform Rebuild.

☐ Is RAID0 configured for virtual disk?

→ RAID0 has no data redundancy, therefore, Check Consistency is disabled in the RAID0 configuration.

Cannot set Write-Back for cache mode:

→ The current cache mode of RAID controller is displayed on [Virtual Disks] - [Properties] - [Policies] - "Write". If additional battery is faulty, is not connected, or insufficiently charged, the cache mode is changed to "WThru (Write Through)" even if you specify "WBack (Write Back)". See Chapter 4 for details.

Event ID129:

The following message appears on Windows Event Log.

Source: msas2k3
Event ID: 129
Type: Warning
Description: Information about Event ID (129) (Source: msas2k3) is not found.

→ Retry by OS has succeeded. It is not the problem in operating the system.

Event ID317:

The following message may be registered in RAID log in Universal RAID Utility and OS log (Event Log or Windows, syslog of Linux).

Source: Raidsrv
Event ID: 317 (8000013D)
Type: Warning
Description: <RU0317>[CTRL: %1 PD:%2(%3) %4 %5] An error of warning level occurred on physical device.
Error code: %6

→ Single-shot message indicates the successful retry even if the message above is registered. If this message is repeatedly registered, physical device may be faulty. Contact your service representative.

Access LED flashes:

☐ Access LED flashes frequently even while the hard disk drive is not accessed.

→ The Access LED flashes if Patrol Read is running. With SATA hard disk drive, the LED may stay on.

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER DVD-ROM, check the following:

☐ Did you set the NEC EXPRESSBUILDER during POST and restart the server?

→ If you do not set the NEC EXPRESSBUILDER during POST and restart the server, an error message will appear or the OS will boot.

☐ Is BIOS configuration correct?

→ The boot device order may be specified with the BIOS SETUP utility of the server. Use the BIOS Setup utility to change the boot device order to boot the system from the optical disk drive first.

<Menu to check: [Boot]>

☐ Is the connected Flash FDD or inserted floppy disk formatted?

→ Make sure that the Windows recognizes that the connected Flash FDD or inserted floppy disk is formatted. If not, format it.

☐ If [Os installation ***default***] is selected at Boot selection screen, following message is displayed:

→ After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause
This EXPRESSBUILDER version was not designed for this computer. Insert the correct version and click [OK]. (When you click [OK], the computer reboots.)	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
EXPRESSBUILDER could not get the hardware parameters written in this motherboard. This version is not designed for this computer or the motherboard may be broken. (When you click [OK], the computer reboots.)	This message is shown when NEC EXPRESSBUILDER could not find system-specific information because of mother board exchange and so on.
The hardware parameters written in this motherboard are incorrect. This version is not designed for this computer or the motherboard may be broken.	

- If the creation of the OEM-Disk for Windows failed, the following message will be displayed.
  Confirm the message, and then try the solution described in the "Cause".

Error message	**Cause**
The format went wrong. It is write-protected or the floppy disk may be damaged. Please check a floppy disk and perform creation of OEM-Disk again.	The Flash FDD or the floppy disk is write-protected. Cancel write-protected state. If you have already cancelled write-protected state, connect the USB floppy disk drive again.
Failed in the deletion of the file. Please confirm whether the media is not write-protected state or not.	

Problems with Express Setup

Specified to join the Domain, but the system is installed as Workgroup:

→ When the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

Unable to specify the details of Network adapter:

→ In Express Setup, you can not specify the details of Network adapter. Specify them from Control Panel after starting Windows.

There is unused area on the lead of hard disk drive:

❑ Did you install Windows Server 2003?

→ If you had installed Windows Server 2003 by Express Setup, the head 8MB of hard disk drive may be unused area.

It is not a problem in operating the system.

Product key was not asked:

❑ Case of Windows Server 2008

→ If you install using BackUp DVD-ROM, product key is not required.

If you install using the DVD-ROM other than BackUp DVD-ROM, product key screen is displayed twice, at "during OS installation" and "before [MICROSOFT SOFTWARE LICENSE TERMS] dialog, which displayed after OS installation".

Enter product key following the message.

❑ Case of Windows Server 2003

→ If you install using BackUp CD-ROM, product key is not required.

If you install using the DVD-ROM other than BackUp DVD-ROM, product key screen is displayed during OS installation.

Enter Product Key following the message.

When IIS is installed with Windows Server 2008 by Express Setup, following feature is installed:

❑ Windows Process Activation Service

– Process Model
– Configuration APIs

❑ Remote Server Administration Tool

– Role Administration Tools
– Web Server (IIS) Tools

→ The feature listed above is activated because they are required for the installation of IIS basic feature.

Problems with Parameter File Creator

Fail to start Parameter File Creator:

- ❑ Parameter File Creator requires to run by "Microsoft® HTML Application host".
  - → If Parameter File Creator does not start, associate the file type with "Microsoft® HTML Application host" via following process.
    1) Click [Run] on Start menu.
    2) Type "%windir%\system32\mshta.exe /register" in the [Open] box, and click [OK].

Problems with N8190-127/131/153/154 FibreChannel Controller

When N8190-127/131/153/154 is used, the names of the Fibre Channel controllers may appear with different names on Device Manager:

→ It is not a problem in operating the system. To display correct controller name, run following command in the driver software NEC EXPRESSBUILDER DVD and restart the system.

[Windows Server 2008 R2/Windows Server 2008 32-bit (x86) / Windows Server 2008 64-bit (x64)]

```
<Drive Letter>:\017\win\winnt\ws2008x64\elxstor\friendlyname.exe
```

Problems with Autorun Menu

Cannot read documents:

☐ Do you have Adobe Reader installed correctly in your system?

→ Some documents are supplied with PDF format. To read the document of PDF format, Adobe Reader is required in your system.

☐ Is the operating system Windows XP SP2 (or later)?

→ With Windows XP SP2 (or later), the following information may appear in browser.

"To help protect your security, Internet Explorer has restricted this file from showing active content that could access your computer. Click here for options..."

1. Click the Information Bar.
   The shortcut menu appears.
2. Click [Allow blocked content].
   The security alert dialog box appears.
3. Click [Yes] on dialog box.

The menu fails to appear:

☐ Is your system Windows XP or later, or Windows Server 2003 or later?

→ The Autorun menu is supported by Windows XP/Windows Server 2003 or later.

→ If your system runs on Windows 2000, you need to setup IE6.0 before using the menu.

→ The menu is not available for Windows 2008 server core environment.

☐ Is **Shift** pressed?

→ Setting the DVD/CD with **Shift** pressed down cancels the Autorun feature.

☐ Is the system in the proper state?

→ The menu may not appear depending on the system registry setting or the timing to set the DVD/CD. In such a case, eject the disk from the disk drive once and insert it again.

Some menu items are grayed-out:

☐ Is your system environment correct?

→ The menu items are grayed-out when the logon user does not have the authority of the Administrator or the system does not meet the requirements to install the application. Login with the user having the proper authority on the proper system, and try again.

Collecting Event Log

This section describes on how to collect the log of various events that occurred on the server.

> **IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

1. Click [Management Tool] → [EventViewer] from the Control Panel.
2. Select the type of the log to collect.

   On [Application Log], the events related to the running application is archived. On [Security Log], the events related to the security is archived. On [System Log], the events occurred at the item which configures Windows system is archived.
3. Click [Save as...] in the [Run] menu.
4. Input the file name of archived log in the [File Name] box.
5. Select the type of the log file you want to save in the [File Type] list box and click [OK].

For more information, refer to Windows Online Help.

Collect Configuration Information

This section describes on how to collect the information on hardware configuration and inside specification.

In order to collect information, "Diagnostic Program" is used.

IMPORTANT: If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

1. Point to [Settings] in Start menu, and click [Control Panel].

   The [Control Panel] dialog box appears.
2. Double-click [Management Tool], and double-click [Computer Management].

   The [Computer Management] dialog box appears.
3. Click [System Tool] → [System Information].
4. Click [Save as System Information File] in the [Operation] menu.
5. Input the file name to save in the [File Name] box.
6. Click [Save].

Collecting Dr. Watson Diagnostic Information

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, refer to Chapter 5.

Memory Dump

If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the location to save the diagnostic information as you like. For more information, refer to "Specifying Memory Dump (Debug Information (refer to Chapter 5 for detail)".

IMPORTANT:

- Consult with your service representative before dumping the memory. Dumping the memory while the server is in the successful operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.

RECOVERY FOR Windows SYSTEM

If any file necessary for running the OS is damaged, use the following procedures to recover the system.

IMPORTANT:

- After recovering the system, see "Updating the System" in Chapter 5 and be sure to update the system.
  Also, you need to update all the drivers after the system update. For more information, see "Installing and Setting Device Drivers" in Chapter 5.
- If the hard disk drive can not be recognized, you can not recover the system.

For Windows Server 2008 R2

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

For Windows Server 2008

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

For Windows Server 2003 x64 Editions

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

For Windows Server 2003

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

MAINTENANCE TOOLS

The Maintenance Tools is a tool of this product prevention to maintain, and to analyze the trouble.

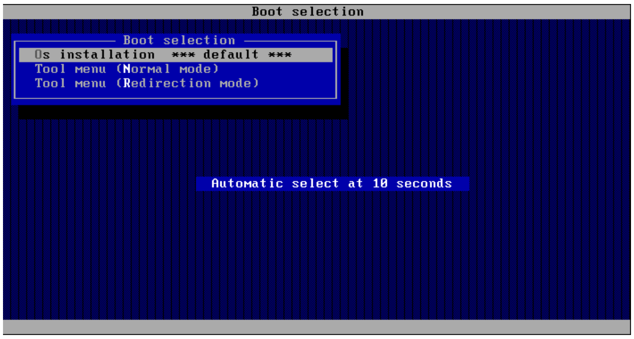
IMPORTANT: This guide contains procedures to use a floppy disk, however, your server is not equipped with factory-installed floppy disk drive. Use the optional Flash FDD or USB FDD.

Starting Maintenance Tools

The Maintenance Tools is started according to the following procedure.

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER DVD-ROM supplied with your server into the optical disk drive of your server.
3. Press **Ctrl**, **Alt**, and **Delete** to reboot the server from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   System boots up displaying Boot selection menu.



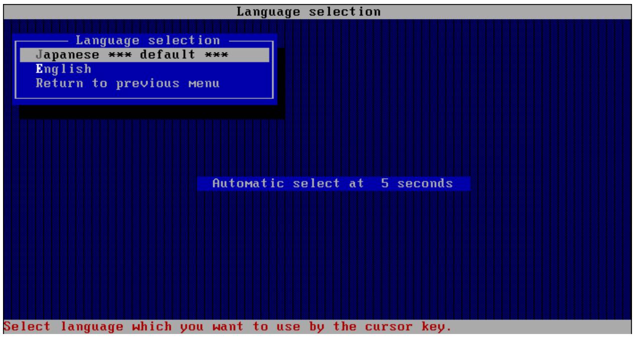
```
                         Boot selection
  ─────── Boot selection ───────
   Os installation   *** default ***
   Tool menu (Normal mode)
   Tool menu (Redirection mode)

                      Automatic select at 10 seconds
```

IMPORTANT: An initial selection of the menu is "Os installation". "Os installation" starts by the automatic after the Boot selection menu is displayed.

4. When a local console is used, "Tool menu (Normal mode)" is selected.

Moreover, "Tool menu (Redirection mode)" is selected when using it with remote console.


Language selection
Language selection
Japanese *** default ***
English
Return to previous menu

Automatic select at 5 seconds

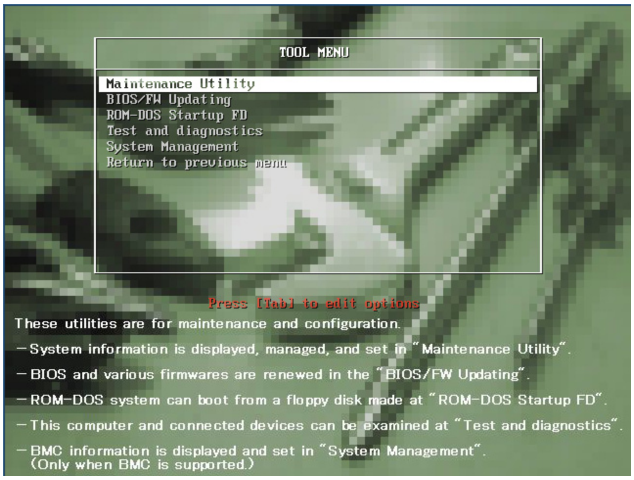
Select language which you want to use by the cursor key.

IMPORTANT: An initial selection of the menu is "Japanese". "Japanese" starts by the automatic operation when the operation is not done for five seconds after the Language selection menu is displayed.

---

5. "English" is selected.

The tool menu is displayed.

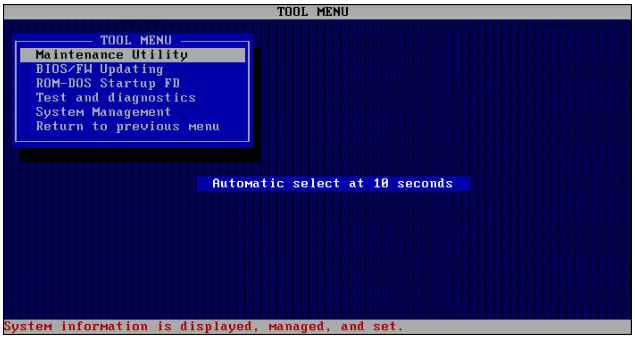

TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu

Press [Tab] to edit options

These utilities are for maintenance and configuration.

- System information is displayed, managed, and set in "Maintenance Utility".
- BIOS and various firmwares are renewed in the "BIOS/FW Updating".
- ROM-DOS system can boot from a floppy disk made at "ROM-DOS Startup FD".
- This computer and connected devices can be examined at "Test and diagnostics".
- BMC information is displayed and set in "System Management".
  (Only when BMC is supported.)

When you use a local console


TOOL MENU
TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu

```
Automatic select at 10 seconds
System information is displayed, managed, and set.
```

When you use a remote console

6. Each tool is selected, and it starts.

Function of Maintenance Tools

The following functions can be executed in the Maintenance Tools.

- Maintenance Utility

  The Off-line Maintenance Utility is started in Maintenance Utility. The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

  IMPORTANT:

  - The Off-line Maintenance Utility is intended for use of your service representative. The NEC EXPRESSBUILDER DVD-ROM you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your service representative and follow instructions.
  - See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your service representative.

  The Off-line Maintenance Utility provides the following features.

  – IPMI Information Viewer

    Provides the functions to view the system event log (SEL), sensor data record (SDR), and filed replaceable unit (FRU) and to make a backup copy of them.

    Using this feature, you can find system errors and events to determine a maintenance part.

  – BIOS Setup Viewer

    Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

  – System Information Viewer

    Provides the functions to view information on the processor and the BIOS and export it to a text file.

  – System Information Management

    Provides the function to make a back-up copy of your data.

    Without the backup data, the system-specific information and/or configuration may not be restored.

    Only the authorized personnel is allowed to restore the backup data.

  – System Management

    The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

- BIOS/FW Updating

  This menu allows you to update the software module such as BIOS and firmware of the server by using the update disk (3.5-inch floppy disk) that is distributed from NEC customer service representative.

  After restarting the system, an update program is started automatically from floppy disk, and the various BIOS and firmware programs are updated.

  > **IMPORTANT:** Do not turn off the server while the update program is running. If the update processing is discontinued, the system becomes unable to start.

- ROM-DOS startup FD

  Creates a support disk for starting the ROM-DOS system.

- Test and diagnostics

  Execute various tests on the server system to check if the server functions are normal and if the connection between the server and additional board is normal.

  After the Test and diagnostics is executed, a system check program assigned to each model starts. See Chapter 7 for details.

- System Management

  The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

  This menu's function is the same as the "System Management" of the "Maintenance Utility".

Maintenance Tools with Remote Console

This subsection describes the procedures for using Maintenance Tools with remote console.

Maintenance Tools contains the remote console feature that allows the system administrator to set up the server from the management workstation (management PC) via the network or the server's COM B (serial) port.

IMPORTANT:

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
- Be sure to select [Tool menu (Redirection mode)] in [Boot selection] menu from the remote console.

Starting

The following two methods are available to start the server.

- Running Maintenance Tools from the management PC via LAN
- Running Maintenance Tools from the management PC via direct connection (COM B)

For the procedure for starting Maintenance Tools with Remote Console, refer to the online document of NEC ESMPRO Manager.

IMPORTANT:

- Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the DVD-ROM drive is not the first device to launch the system.
- Connect the LAN cable to the connector on management LAN port. Or, connect the LAN cable to LAN connector 1 if Shared BMC LAN feature is used.
- Use the serial port B for direct connection.
- To use this feature, you need to create a configuration file (3.5-inch floppy disk) that includes communication method between the server and the management PC, and various setup parameters.
  Use NEC ESMPRO BMC Configuration or NEC ESMPRO Agent Extension or run "System Management" menu from NEC EXPRESSBUILDER to create a configuration file. Save the configuration file into the root directory of the floppy disk as the following file name.
  – File name: CSL_LESS.cfg
- If you exit the BIOS SETUP by unusual way (e.g., forced power-off or reset), the redirection process may fail. In such a case, setup again by using the configuration file.
- On Windows Server 2008, you need to open Device Manager, disable the COM port, and restart the system to use the direct connection through COM port.

NOTE: The following items of BIOS setup information will be set as shown below.

- LAN Controller: [Enabled]
- Serial Port A: [Enabled]
  Base I/O Address: [3F8]
  Interrupt: [IRQ 4]
- Serial Port B: [Enabled]
  Base I/O Address: [2F8]
  Interrupt: [IRQ 3]
- BIOS Redirection Port: [Serial Port B]
- Baud Rate: [19.2K]
- Flow Control: [CTS/RTS]
- Console Type: [PC ANSI]

RESETTING THE SERVER

If the server halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the server.

IMPORTANT: Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

FORCED SHUTDOWN

Use this function when an OS command does not shut down the server, the POWER/SLEEP switch does not turn off the server, or resetting does not work.

Press and hold the POWER/SLEEP switch on the server for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 10 seconds after turning off the power (forced shutdown).

IMPORTANT:

- If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.
- If the processor is heated excessively, the circuit for protecting expensive components is started. If so, the POWER/SLEEP switch cannot be used to control the power because the system is entered into the reset status. Pull out the power cord and turn off the power. After a while, check the operation environment (including the ambient temperature). Then connect the power cord and turn on the power. It may be necessary to leave the power-off status in the period until the processor is cooled sufficiently (about five minutes in normal).

Chapter 9

Upgrading Your Server

This chapter describes internal optional devices available for the server, procedures for installing or removing such optional devices, and notes on using them.

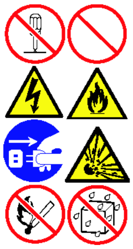
IMPORTANT:

- Optional devices described in this chapter may be installed or removed by any user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your service representative for installing or removing any optional devices.
- Make sure to use only optional devices and cables authorized by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing such devices or cables will be charged.
- For the Windows Server operating system user:
  When you made any change to the hardware configuration, make sure to update the system (see Chapter 5 for details.).

SAFETY NOTES

Observe the following notes to install or remove optional devices safely and properly.

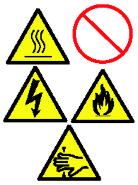
WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-4 to 1-11 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions might cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Do not lift the server only by a single person.
- Make sure to complete card installation.
- Do not install the server on the rack leaving the cover removed.
- Do not install the server on the rack halfway.
- Do not pinch your fingers with mechanical component.
- Avoid installation in extreme temperature conditions.
- Failure to follow these warnings may cause an electric shock.

ANTI-STATIC MEASURES

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear a wrist strap (an arm belt or anti-static glove).

  Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body. Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.
  - Work with the server on the anti-static or concrete floor.
  - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.
- Use a work table.

  Place the server on an anti-static mat to work with it.

- Cloth
  - Do not wear a wool or synthetic cloth to work with the server.
  - Wear anti-static shoes to work with the server.
  - Take off any jewels (a ring, bracelet, or wrist watch) before working with the server.
- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the server.
  - Hold any component by its edge to avoid touching any terminals or parts.
  - To store or carry any component, place it in an anti-static bag.

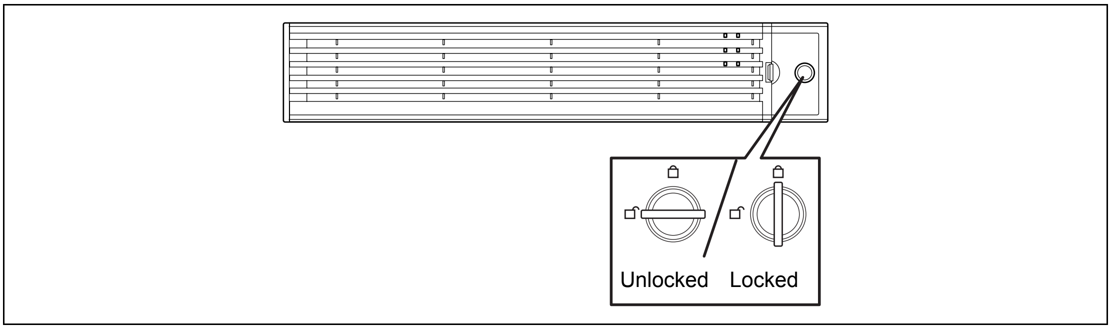
PREPARING FOR INSTALLATION AND REMOVAL

Follow the procedure below to prepare for installing or removing components.

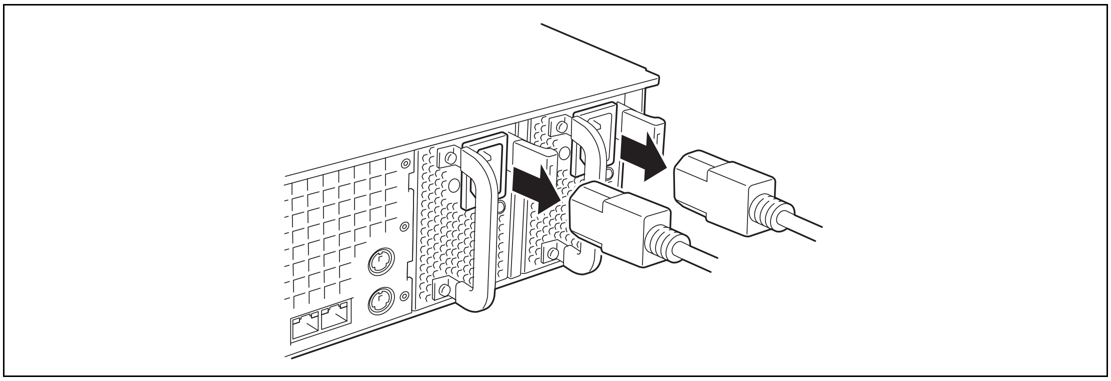
1. Shutdown the OS.

Shutdown process is not required if the hard disk drives and the additional power supply units are hot-swappable.

2. Unlock the front bezel with the security key. Remove the front bezel from the chassis.



3. Remove all cables and power cords from the server.
Attaching or removing components requires a Phillips and flat-head screwdriver.



Prepare a Phillips screwdriver to install or remove the component.
The server needs to be pulled out from the rack for installing/removing any internal components other than the hard disk drives and power supply units.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions might cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

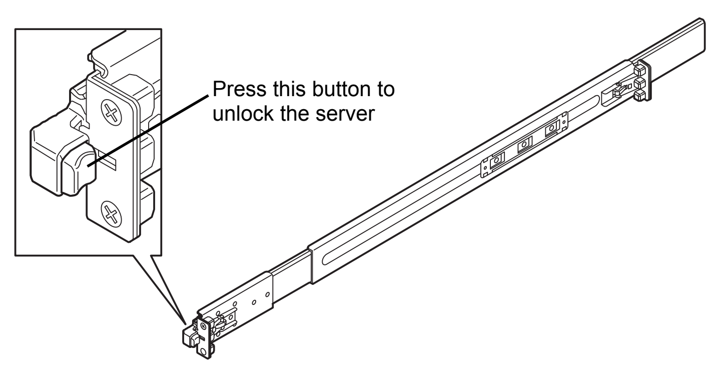
- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

4. See page 9-5 to prepare.

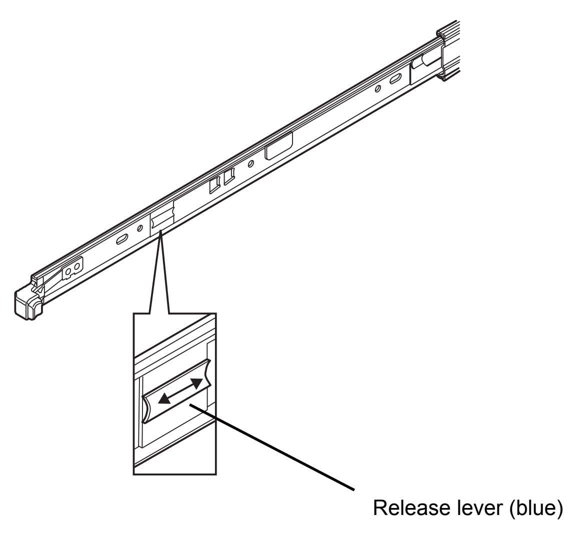
> **NOTE:** To confirm the device you are going to maintain, use the UID switch and the UID LED that goes on when the switch is pressed.

5. Press the unlock buttons at the right and left sides of the front panel, and slowly pull out the server from the rack.

The server is locked while you are pulling it. Stop pulling when it is locked.



To place the server in the rack, push it back into the rack while pushing the right and left release levers (blue) forward or rearward.



> **IMPORTANT:** Be very careful not to get your finger caught in the levers or rails.

ATTACHMENT AND POST-ATTACHMENT CHECKS

After adding an option or attaching a component, check the following points.

- **Attach removed components in the same way as before.**

  When adding or removing components, attach removed components and cables in the same way as before. Forgetting to attach components or leaving cables unplugged during assembly can cause operational problems. In addition, be sure to attach components and cables securely, not loosely.

- **Make sure that attaching components and screws in the server has not been forgotten.**

  In particular, make sure that attaching screws and other conductive components has not been forgotten. Leaving a conductive component on the motherboard or the end of a cable can cause operational problems when the power is turned on.

- **Check the effectiveness of server-internal cooling.**

  Make sure that the vents used to cool the wires running through the inside of the server are not blocked. If the cooling effectiveness is lost, the server-internal temperature can increase, causing operational problems.

- **Use tools to check the operation.**

  After adding certain devices, it is necessary to make sure they are correctly attached by using tools such as diagnostic utilities or BIOS setup utilities. These requirements are described in detail in the procedures for adding each device. See these procedures as necessary.

HARD DISK DRIVE

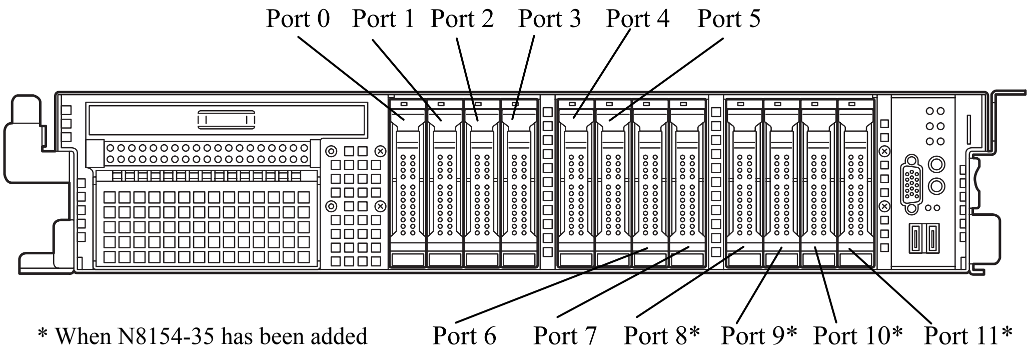
The hard disk drive bay at the front of the server chassis may contain hard disk drives of approximately 25.4 mm (1 inch) high.

The disk interface, number and size of hard disk drives depend on server model, as described below. The IDs of hard disk drive (channel numbers or port numbers) are also predefined.

■ 2.5-inch Disk Model

Up to 12 hard disk drives can be installed in the hard disk drive bays. The order of the port numbers is determined according to the included slots. For details, see the figure below.

IMPORTANT: Use a hard disk drive authorized by NEC. Installing a third-party hard disk drive might cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models (current as of June 2010):
– N8150-276 (160GB, 7200rpm, SATA2/300)
– N8150-277 (500GB, 7200rpm, SATA2/300)
– N8150-300 (146.5GB, 10000rpm, SAS)
– N8150-301 (300GB, 10000rpm, SAS)
– N8150-322 (450GB, 10000rpm, SAS)
– N8150-304 (600GB, 10000rpm, SAS)
– N8150-302 (73.2GB, 15000rpm, SAS)
– N8150-303 (146.5GB, 15000rpm, SAS)
– N8150-702 (50GB, SSD)



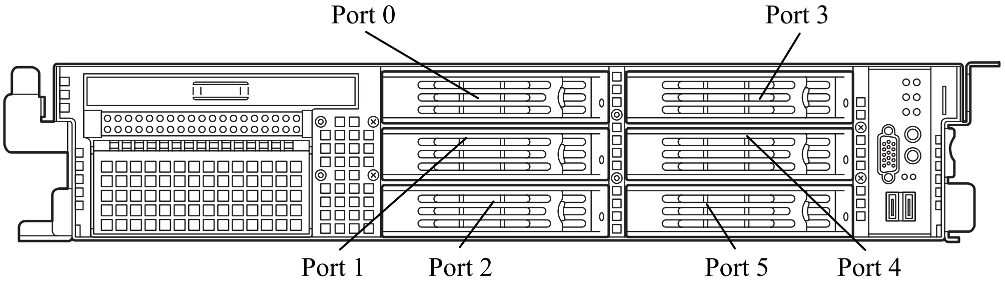
* When N8154-35 has been added

■ 3.5-inch Disk Model

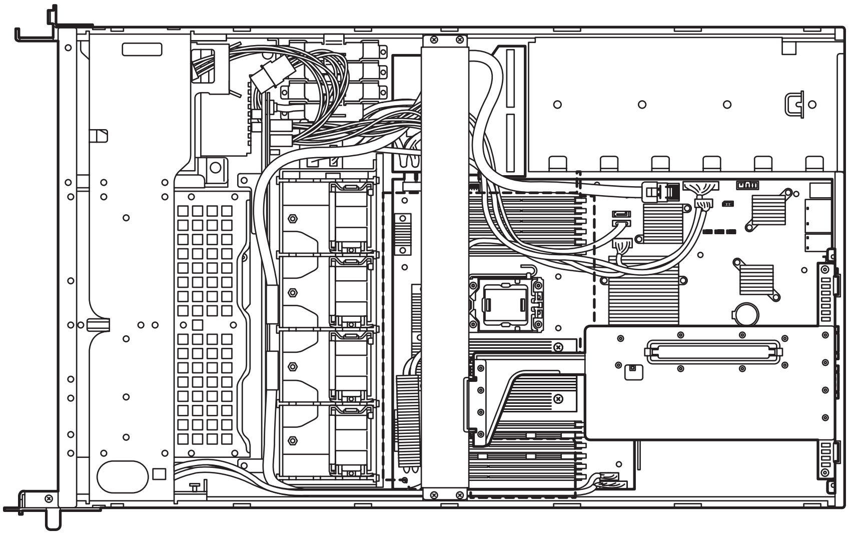
Up to six hard disk drives can be installed in the hard disk drive bays. The order of the port numbers is determined according to the included slots. For details, see the figure below.

IMPORTANT: Use a hard disk drive authorized by NEC. Installing a third-party hard disk drive might cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models (current as of June 2010):

– N8150-209A (250GB, 7200rpm, SATA2/300)
– N8150-274 (500GB, 7200rpm, SATA2/300)
– N8150-263 (1TB, 7200rpm, SATA2/300)
– N8150-278 (2TB, 7200rpm, SATA2/300)



Upon shipment, the hard disk drive bays are connected to the onboard controller in the server. If using these hard disk drives for a RAID system, refer to the following.



- If using the optional RAID controller N8103-129/130

  Use WebBIOS or the Universal RAID Utility to build, set up, or manage a RAID system.
  For details, see page 6-24 of *Universal RAID Utility*, which is included with the optional RAID controller.

The hard disk drive bays include dummy trays. These dummy trays are used to increase the server-internal effects of cooling. Be sure to install the dummy trays if not installing hard disk drives.

Installation

Take the following steps to install a hard disk drive. This procedure applies to all the hard disk drive bays. See the next section for the procedure installing a hard disk drive in the flex bay.

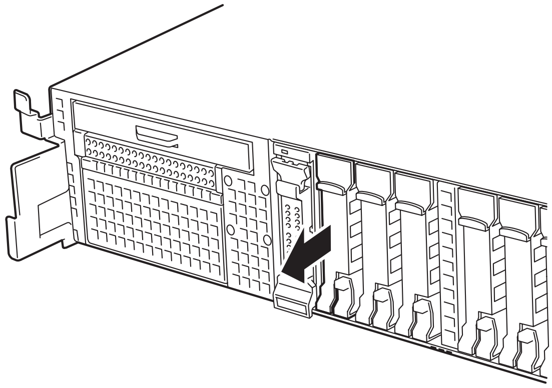
NOTE: Any hard disk drive can be installed or removed in or from the server only by removing the front bezel.

IMPORTANT:

- In the RAID System, use the hard disk drives having the same specification including the capacity.

2.5-inch hard disk drive

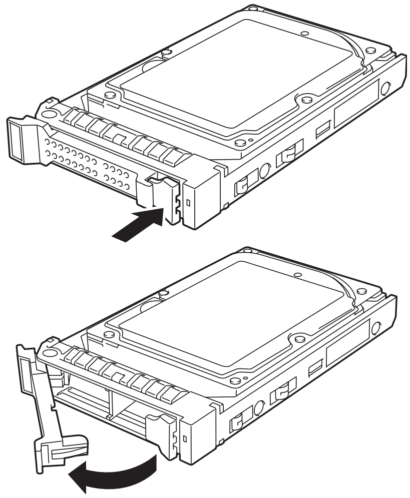
1. See page 9-4 to prepare.
2. Locate the slot in which you are going to install a hard disk drive.
   The server has eight slots. Fill the vacant slots with hard disk drives from the lower port number (as described in "2.5 inch hard disk drive" on page 9-7).
3. Remove the dummy tray.
   Dummy trays are in all hard disk drive bays except the Port0 bay.



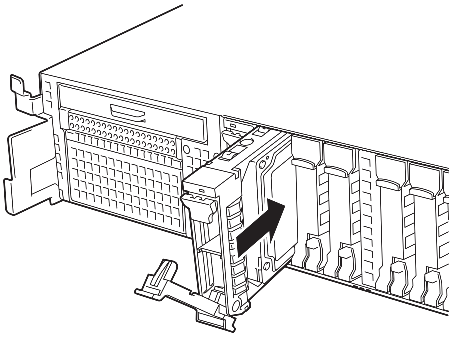
IMPORTANT:

- Keep the dummy tray for future use.
- The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.

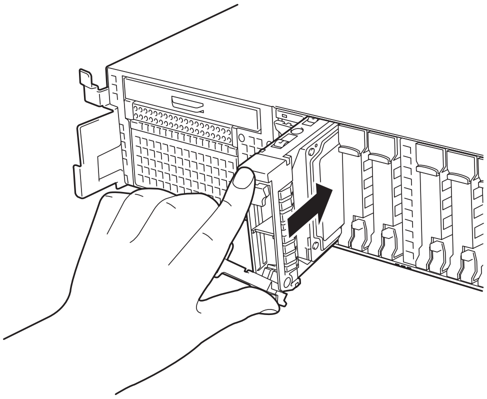
4. Unlock the hard disk drive handle.



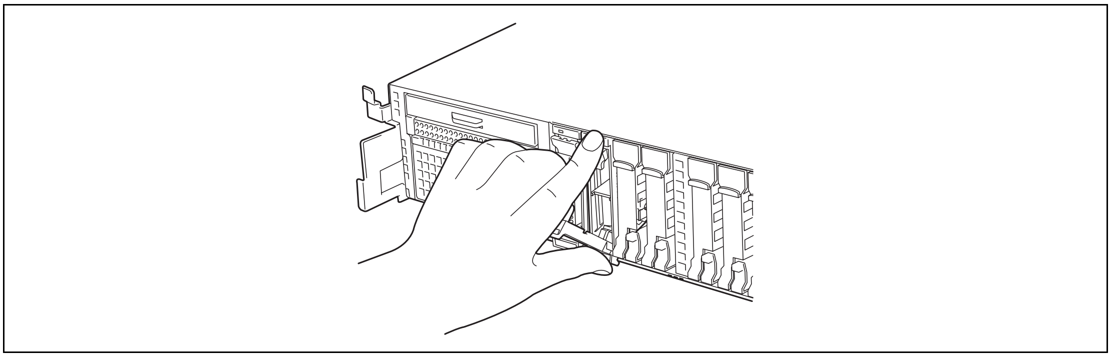
5. Firmly hold the drive carrier, and insert it into the slot.



6. Put your fingers on the front of the drive carrier.



7. Push the drive carrier into the slot until it stops.

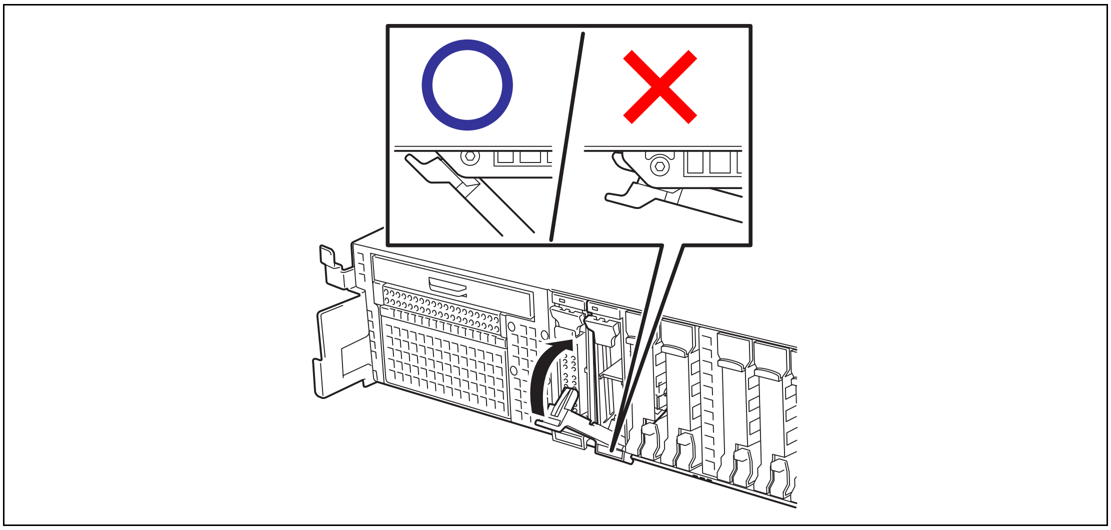


IMPORTANT:

- Confirm that the handle is hooked to the frame when having inserted the hard disk drive.
- Be careful not to get your finger caught between the handle and tray.

8. Slowly close the handle.

The drive carrier is locked when a "click" is heard.



IMPORTANT:

- Be careful not to get your finger caught between the handle and tray.
- Push the drive further to check if it is firmly secured.

NOTE: Confirm that the handle is hooked to the frame when having inserted the hard disk drive.

9. Power on the server, and run the SETUP utility.
   Select the [Boot] menu (described on page 4-33) to set the boot priority. When you install an additional hard disk drive, the boot priority stored in BIOS is cleared.

10. Install the front bezel you removed in step 2.

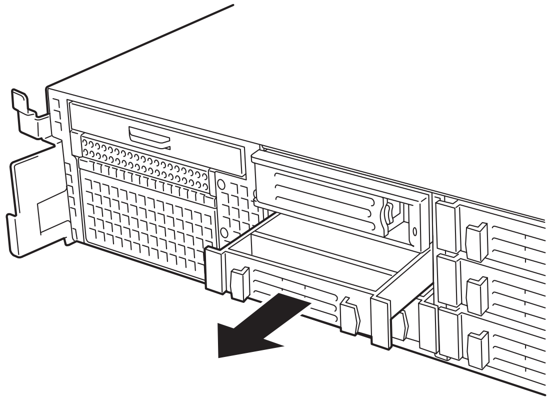
    There are tabs on the left side of the front bezel. Engage the tabs with the server frame, install the front bezel, and lock it with the security key.

3.5-inch hard disk drive

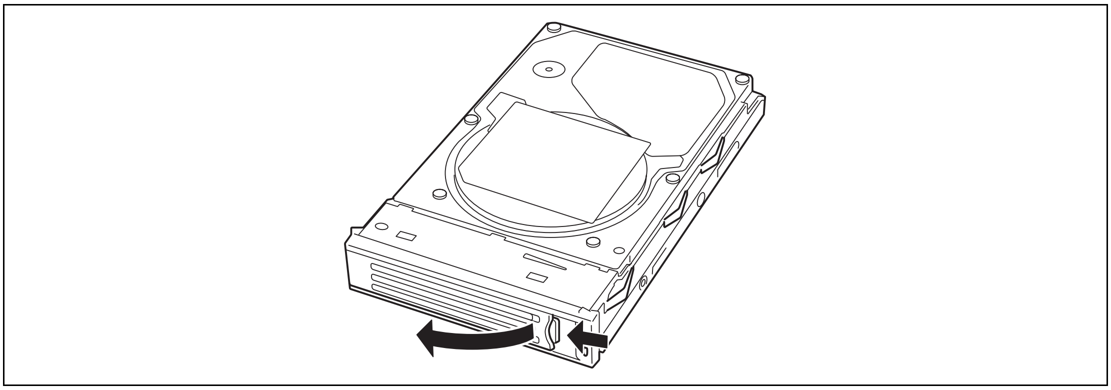
1. See page 9-4 to prepare.
2. Locate the slot in which you are going to install a hard disk drive. The server has six slots. Install the hard disk drives in ascending port number order. The port numbers are determined by the slot positions.
3. Remove the dummy tray.
   Install dummy trays in all slots.

IMPORTANT:

- Keep the dummy tray for future use.
- The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.



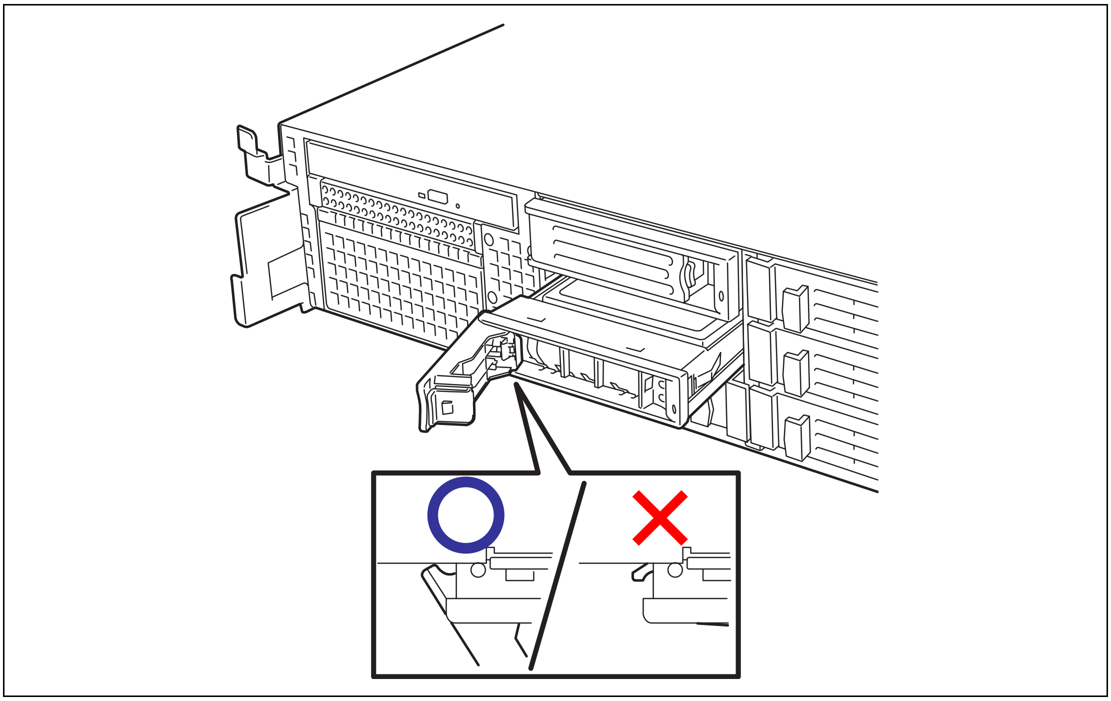
4. Unlock the hard disk drive handle.



5. With the handle in the fully open position, firmly hold the drive carrier and handle, and insert it into the chassis.

IMPORTANT:

- Push the drive to check if it is firmly secured.
- Carefully hold the hard disk drive with both hands.



6. When the handle begins to close by itself, slowly close the handle.

   The drive carrier is locked when a "click" is heard.

   IMPORTANT:

   - Be careful not to get your finger caught between the handle and tray.
   - Push the drive further to check if it is firmly secured.

   NOTE: Confirm that the handle is hooked to the frame when having inserted the hard disk drive.

7. Power on the server, and run the SETUP utility.

   Select the [Boot] menu (described on page 4-33) to set the boot priority. When you install an additional hard disk drive, the boot priority stored in BIOS is cleared.

8. Install the front bezel you removed in step 2.

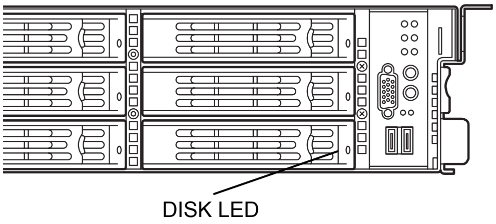
   There are tabs on the left side of the front bezel. Engage the tabs with the server frame, install the front bezel, and lock it with the security key.

Removal

Take the following steps to remove a hard disk drive:

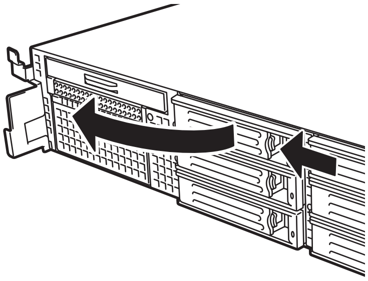
3.5-inch hard disk drive

NOTE: If removing a failed hard disk drive, confirm the slot in which the DISK LED of the hard disk drive is amber before starting the removal.

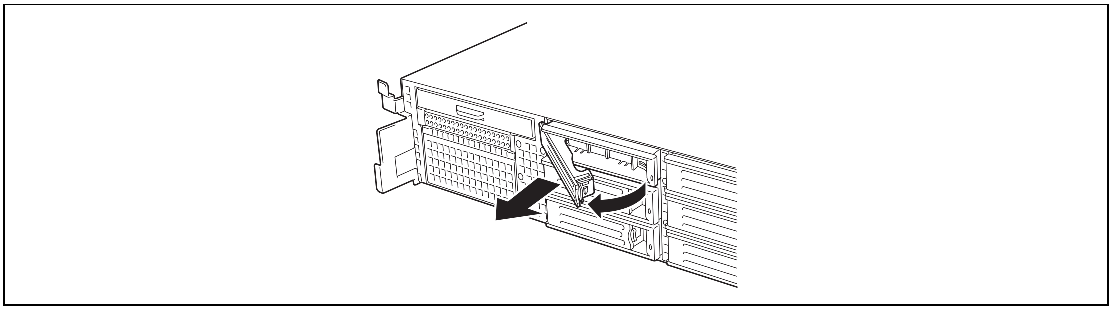


1. See page 9-4 to prepare.
2. Push the lever to unlock, and open the handle.

IMPORTANT: Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.



3. Firmly hold the handle and hard disk drive, and pull out the hard disk drive.
4. If using the server with the hard disk drive removed, install the dummy tray in the vacant slot to ensure the cooling efficiency.

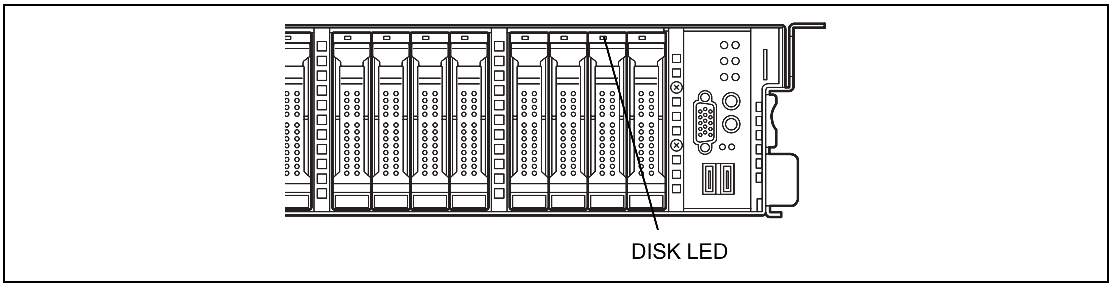


5. Power on the server, and run the SETUP utility.
This is because, when a hard disk drive is added, the previously recorded boot order settings are cleared.

6. Install the front bezel you removed in step 2.

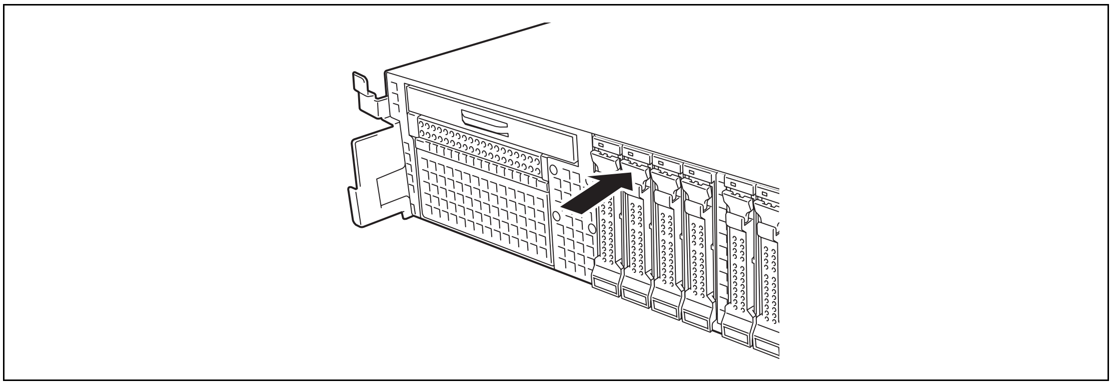
2.5-inch hard disk drive

IMPORTANT: Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.

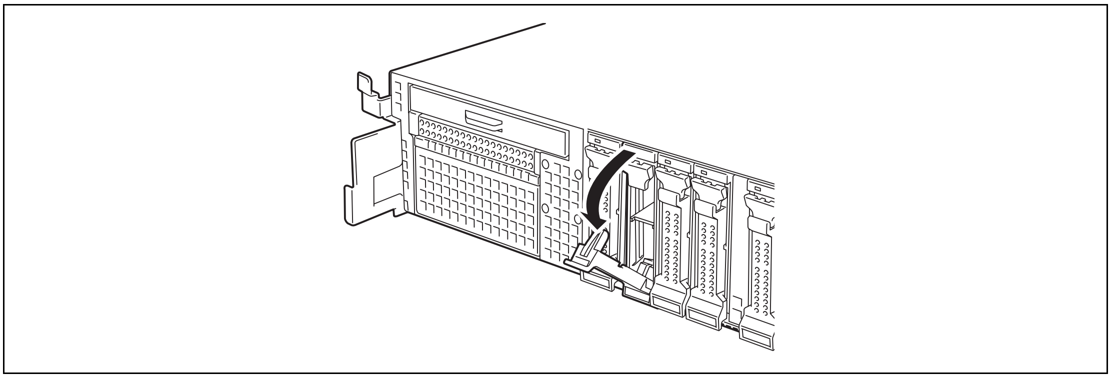


1. See page 9-4 to prepare.

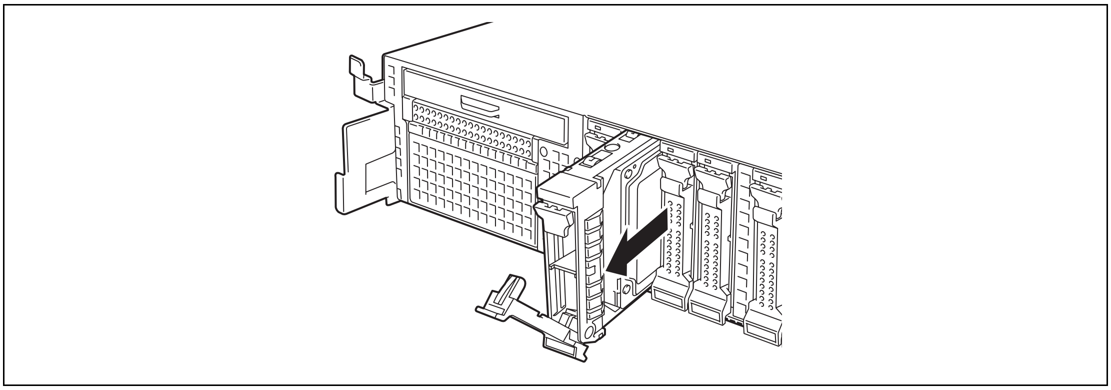
2. Push the lever to unlock,



3. Open the handle.



4. Firmly hold the drive carrier, and pull out the hard disk drive. Do not hold the handle.



5. If using the server with the hard disk drive removed, install the dummy tray in the vacant slot to ensure the cooling efficiency.

6. Power on the server, and run the SETUP utility.
Select the [Boot] menu (described on page 4-33) to set the boot priority. When you install an additional hard disk drive, the boot priority stored in BIOS is cleared.

7. Install the front bezel you removed in step 2.

Notes on Replacing Hard Disk Drives in the RAID System

When the hard disk drives are in the RAID System, you can restore the state before an error using the auto-rebuild feature that stores the data in the old hard disk drive into a new one.

The auto-rebuild feature is available for the RAID1, RAID5, RAID6, RAID10, or RAID50.

Auto-rebuild is carried out when you hot-swap a failed hard disk drive with a new one (replace the disk while the server is powered). While auto-rebuild is in progress, the DISK LED flashes green and amber alternatively to indicate it.

Observe the following notes for auto-rebuild.

- Do not power off the server in the period between a hard disk drive error and completion of auto-rebuild.
- When you removed a hard disk drive, wait at least 90 seconds before installing the hard disk drive back again.
- Do not replace another hard disk drive while rebuilding is in progress. (The DISK LED flashes in green and amber alternatively while rebuilding the hard disk drive.)

POWER SUPPLY UNIT

Your server contains one or two power supplies.

The second power supply is optional and provides a redundant configuration that ensures continued operation of the system in the unlikely event one of the power supplies fails.

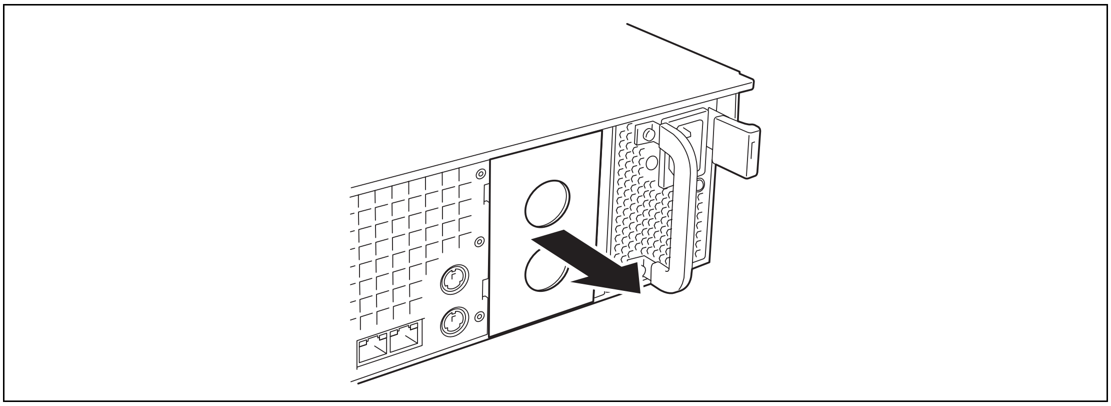
Installation

Take the following steps to install a power supply unit:

1. See page 9-4 to prepare.

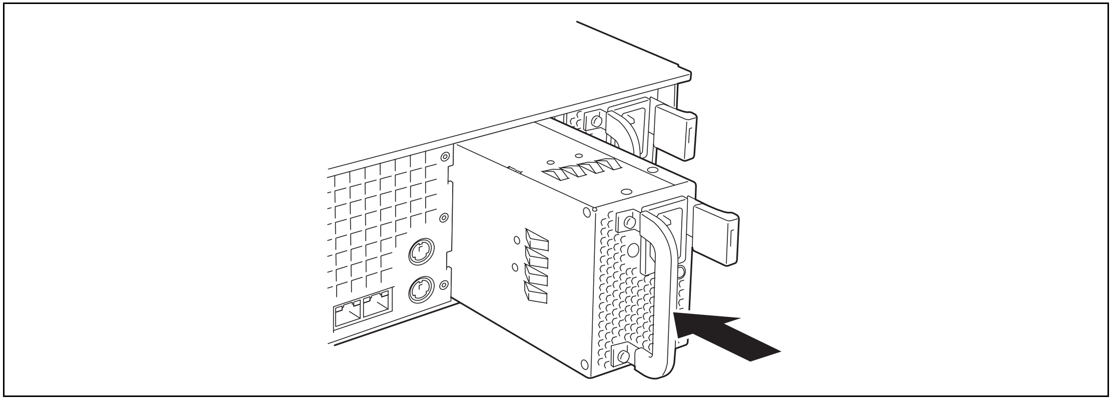
   IMPORTANT: Be sure to turn off the power. Not doing so might cause incorrect operations or a failure.

2. Remove the blank cover.
   Insert your fingers into the two round holes, and remove the cover.

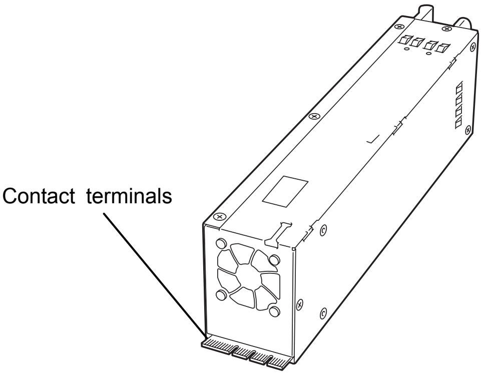


   IMPORTANT: Keep the removed blank cover for future use.

3. Insert the power supply unit.



IMPORTANT: Do not touch the terminals of the power supply unit.



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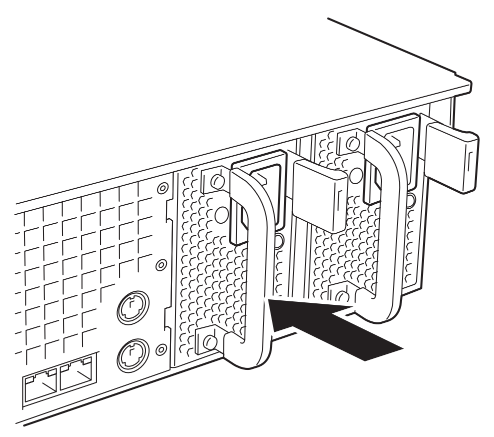
4. Grab the handle and securely press the power supply unit into place.

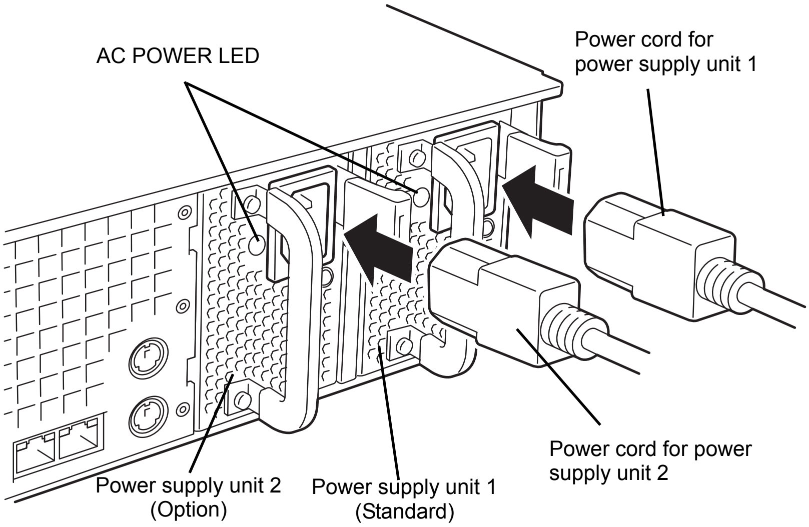
   The power supply unit is locked when a distinct "click" is heard.



5. Connect two power cords.

Use the power cord provided with the standard power supply unit and the one provided with the system. The AC POWER LEDs flash green when the power cords are connected.

If the power unit is not connected with the power cord, its AC POWER LED goes on amber. When the power cord is connected, AC POWER LEDs on both power supply units go on green.


AC POWER LED
Power cord for power supply unit 1
Power cord for power supply unit 2
Power supply unit 2 (Option)
Power supply unit 1 (Standard)

6. Power on the server.

The AC POWER LEDs go on.

7. Confirm, by the STATUS LED or on the POST screen, that there are no errors related to the power supply units.

See page 8-10 for details on the error messages.

If the AC POWER LEDs are off, reinstall the power supply units. If the same error message still appears, contact your sales representative.

Replacing a Failed Power Supply Unit

Replace only a failed power supply unit.

⚠ CAUTION

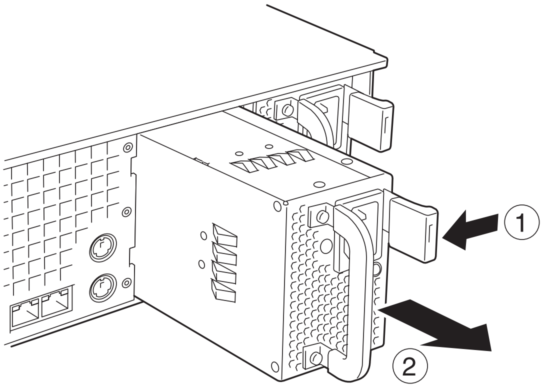
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-4 to 1-11 for details.

- Failure to follow this warnings may cause an electric shock.

IMPORTANT: Do not remove a power supply unit operating normally.

NOTE: If one power supply unit fails while the server contains two power supply units in a redundant configuration, the failed power supply unit can be replaced with the system operating (power-on state). (Skip step 2.)

1. Locate the failed power supply unit by the AC POWER LED on the rear of each power supply unit. (The LED of the failed power supply unit is lit amber or flashing amber.)
2. Shutdown the system, and press the POWER switch to turn off the power.
3. Disconnect the power cord from the failed power supply.
4. Grab the power supply unit handle, and pull the unit towards you while pressing the lever.
5. Hold the handle of the failed power supply.



6. If operating the server with a single power supply unit without installing a new one, install the blank cover you removed in step 2 of installation procedure.

IMPORTANT: To maintain the cooling effect in the server, install the blank cover in the vacant slot.

7. Install the new power supply unit taking steps 3 to 7 of "Installation", and confirm that the power supply unit is installed normally.

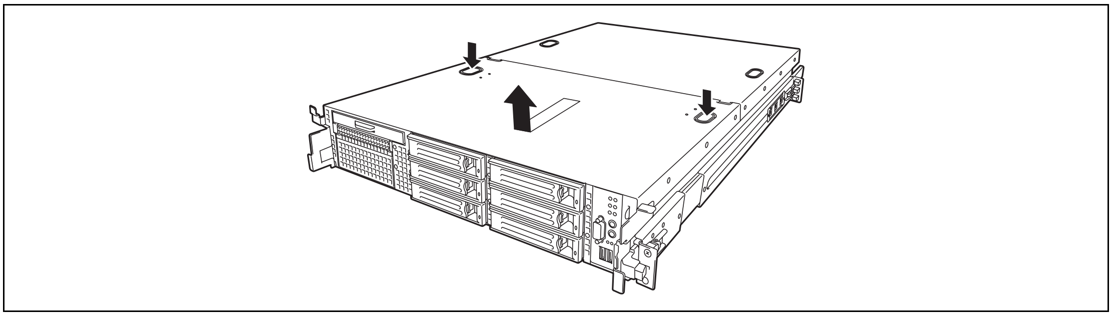
NOTE: If one of the two power supply units of the server is replaced, the AC POWER LED of the new power supply unit goes on amber until the AC power cord is connected. It turns on green when the AC power cord is connected. (If it is replaced while the power is off, the LED flashes green. The LED goes on green when the power is turned on.)

DRIVE COVER

When attaching the drive cover, make sure that the drive cover tab is securely inserted into the server frame, and slide the drive cover towards the back.

Removal

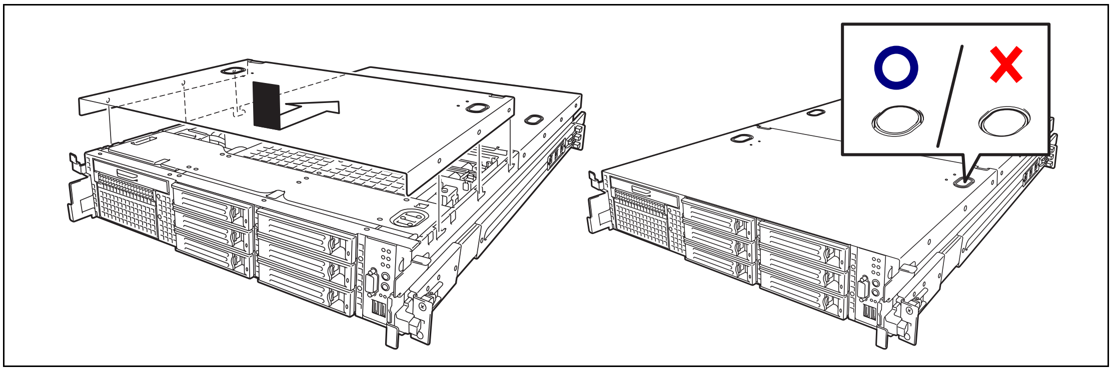
1. See page 9-4 to prepare.
2. Pull the server out of the rack (as described on page 9-4).
3. Slide the drive cover toward the rear of the server while pressing the lock buttons on the cover.
4. Lift off the drive cover from the server.



Installation

When installing the drive cover, confirm that the tab of the drive cover is securely inserted into the slots in the server frame. Slide the drive cover toward the rear of the server. The drive cover is locked when a distinct "click" is heard. At this time, check the lock buttons for normal state.

NOTE: The system must be operated with the top cover installed to ensure proper cooling.

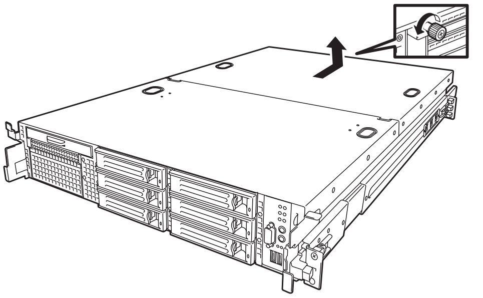


LOGIC COVER

Remove the logic cover when attaching or removing DIMMs, the CPU, or PCI cards, as well as when changing internal cable connections

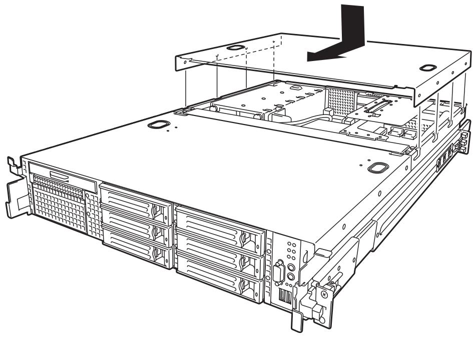
Removal

1. See page 9-4 to prepare.
2. Pull the server out of the rack (as described on page 9-4).
3. Loosen the set screw on the back of the logic cover, and then slide the cover towards the back.
4. Lift the logic cover to remove it from the server.



Attachment

When attaching the logic cover, make sure that the logic cover tab is securely inserted into the server frame, and slide the drive cover towards the front. When the cover is in position, tighten the set screw on the back.



NOTE: If the logic cover is hard to close when attaching it, remove the drive cover and attach the logic cover first.

DIMM

Install an additional DIMM (Dual Inline Memory Module) to a DIMM socket on the motherboard in the server. The motherboard is provided with 12 DIMM card slots.

NOTE: Up to 192GB of memory (16GB DIMM × 12) can be installed. Upon factory shipment, no memory is installed.

IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or on-board parts by a bare hand or place the DIMM directly on the desk. For static notes, see page 9-3.
- Make sure to use a DIMM authorized by NEC. Installing a third-party DIMM might cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.
  Purchase DIMMs of the following models (current as of June 2010):
  - N8102-371 Additional 1GB memory stick (1GB × 1)
  - N8102-372 Additional 2GB memory stick (2GB × 1)
  - N8102-373 Additional 4GB memory stick (4GB × 1)
  - N8102-374 Additional 8GB memory stick (8GB × 1)
  - N8102-375 Additional 16GB memory stick (16GB × 1)
  - N8102-387 Additional 2GB memory stick (1GB × 2) *
  - N8102-388 Additional 4GB memory stick (2GB × 2) *
  - N8102-389 Additional 8GB memory stick (4GB × 2) *
  - N8102-390 Additional 16GB memory stick (8GB × 2) *
  - N8102-391 Additional 32GB memory stick (16GB × 2) *

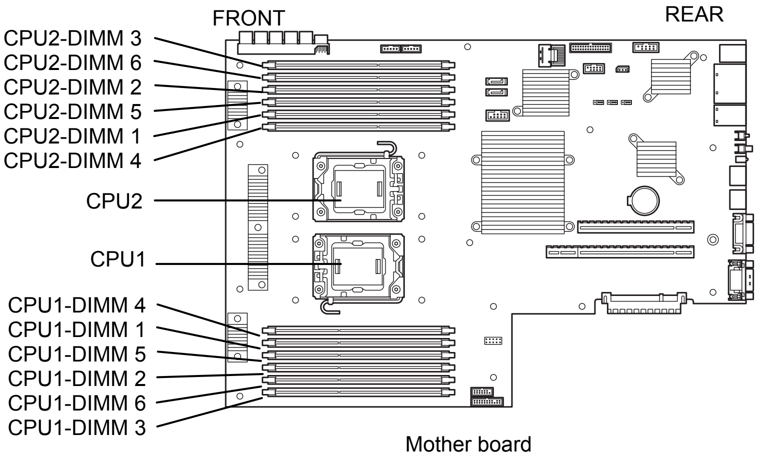
  * For Memory Mirroring or LockStep feature

Installation Order

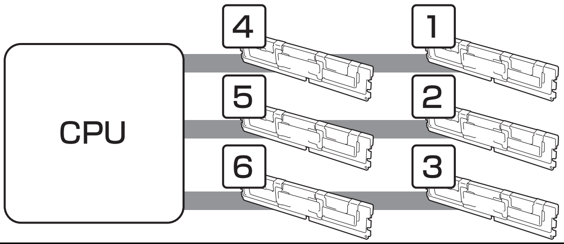
Installation order depends on the number of CPUs installed.

- 1-CPU configuration:
  Install DIMMs starting from the smallest slot number.
- 2-CPU configuration:
  Alternately install DIMMs starting from the smallest slot number of each CPU.
- Install DIMMs starting from the largest capacity and from the smallest slot number (16GB → 8GB → 4GB → 2GB → 1GB).

	1-CPU configuration	2-CPU configuration
CPU2-DIMM 3		6
CPU2-DIMM 6		12
CPU2-DIMM 2		4
CPU2-DIMM 5		10
CPU2-DIMM 1		2
CPU2-DIMM 4		8
CPU1-DIMM 4	4	7
CPU1-DIMM 1	1	1
CPU1-DIMM 5	5	9
CPU1-DIMM 2	2	3
CPU1-DIMM 6	6	11
CPU1-DIMM 3	3	5



IMPORTANT: If CPU2 is not installed, CPU2_DIMM1 through CPU2_DIMM6 are not available.



NOTES:

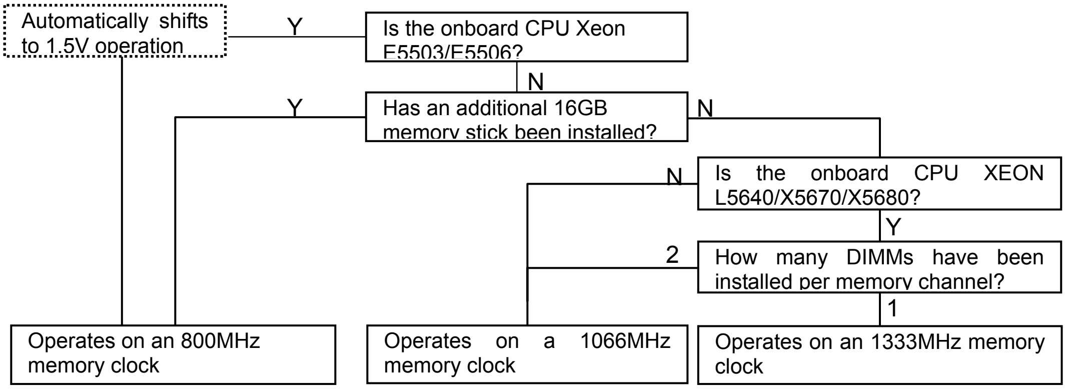
- If an N8102-371/372/373/374/375 memory stick is installed or the standard memory configuration is used, memory mirroring and LockStep (x8 SDDC) features are not supported.
- The factory-installed two 1GB DIMMs and additional 1GB memory stick is unavailable for x4 SDDC feature. To use x4 SDDC feature, additional 2GB/4GB/8GB/16GB memory stick is required.

Memory Clock

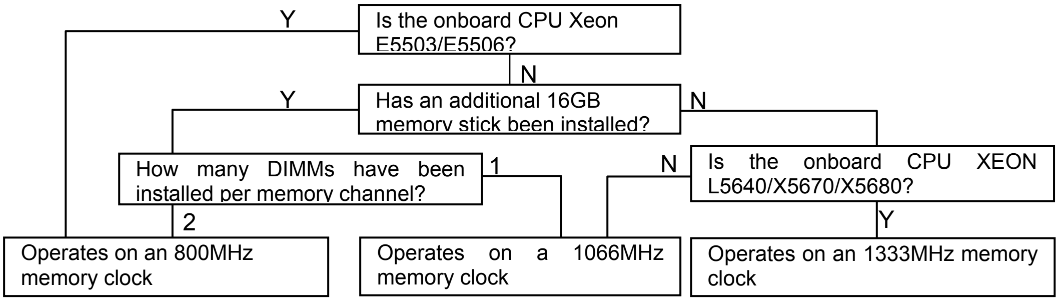
The DR3-800/1066/1333MHz memory clock frequencies are supported, but this depends on the CPU and memory configurations.

Note that all bus memory clocks operate at the same clock frequency.

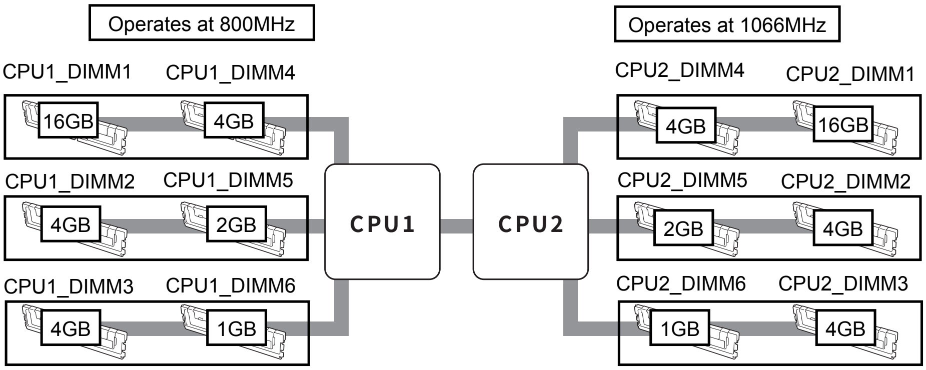
Memory drive voltage: Low (1.35V/power-saving mode)


Automatically shifts to 1.5V operation
Y
Is the onboard CPU Xeon E5503/E5506?
N
Y
Has an additional 16GB memory stick been installed?
N
N
Is the onboard CPU XEON L5640/X5670/X5680?
Y
2
How many DIMMs have been installed per memory channel?
1
Operates on an 800MHz memory clock
Operates on a 1066MHz memory clock
Operates on an 1333MHz memory clock

Memory drive voltage: Normal (1.5V)


Y
Is the onboard CPU Xeon E5503/E5506?
N
Y
Has an additional 16GB memory stick been installed?
N
How many DIMMs have been installed per memory channel?
1
N
Is the onboard CPU XEON L5640/X5670/X5680?
2
Y
Operates on an 800MHz memory clock
Operates on a 1066MHz memory clock
Operates on an 1333MHz memory clock

<Example>


Operates at 800MHz
Operates at 1066MHz
CPU1_DIMM1
CPU1_DIMM4
16GB
4GB
CPU1_DIMM2
CPU1_DIMM5
4GB
2GB
CPU1_DIMM3
CPU1_DIMM6
4GB
1GB
CPU1
CPU2
CPU2_DIMM4
CPU2_DIMM1
4GB
16GB
CPU2_DIMM5
CPU2_DIMM2
2GB
4GB
CPU2_DIMM6
CPU2_DIMM3
1GB
4GB

If the onboard CPU is Xeon E5620

Memory RAS Feature

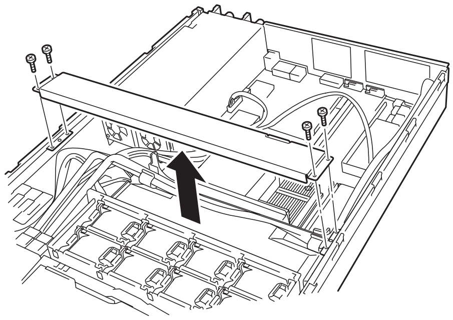
The server has RAS features including "standard memory configuration (x4 SDDC ECC memory)", a "memory mirroring feature", a "memory LockStep (x8 SDDC ECC memory) feature", and a "memory sparing feature". To use the memory mirroring or LockStep feature, see "Using the Memory RAS Features" (on page 9-35).

Installation

Install a DIMM in the following procedure.

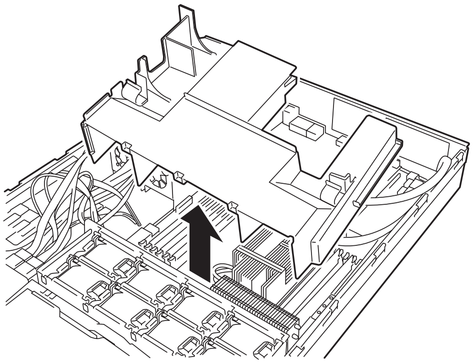
IMPORTANT: The server supports DIMMs of only the low-profile type (30 mm (1.2 inches) in height). It does not support DIMMs exceeding the specified height.

1. See page 9-4 to prepare.
2. Pull out the server from the rack (as described on page 9-4).
3. Remove the drive cover and logic cover (as described on page 9-25).
4. Remove the PCI riser card (as described on page 9-51).
5. Remove the four support bar screws, and then remove the support bar.

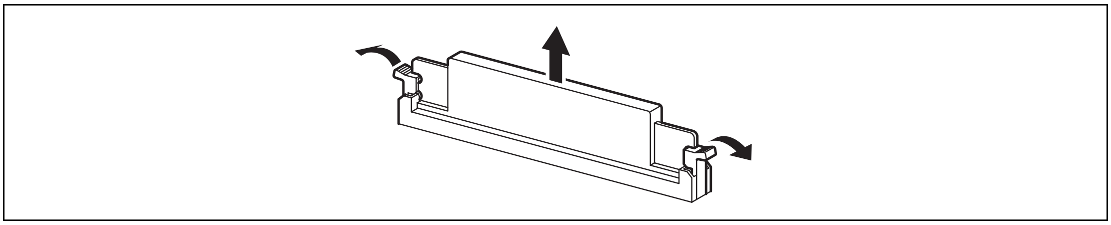


NOTE:
The support bar can spring upwards when freed, resulting in the loss of screws.
Firmly hold the support bar down while removing the screws.

6. Lift the processor duct to remove it.



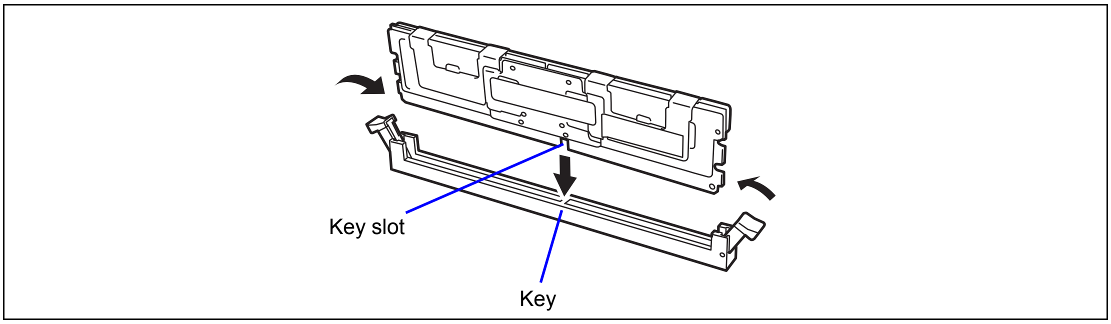
7. Open levers at left and right side of the DIMM socket, and remove the dummy memory.



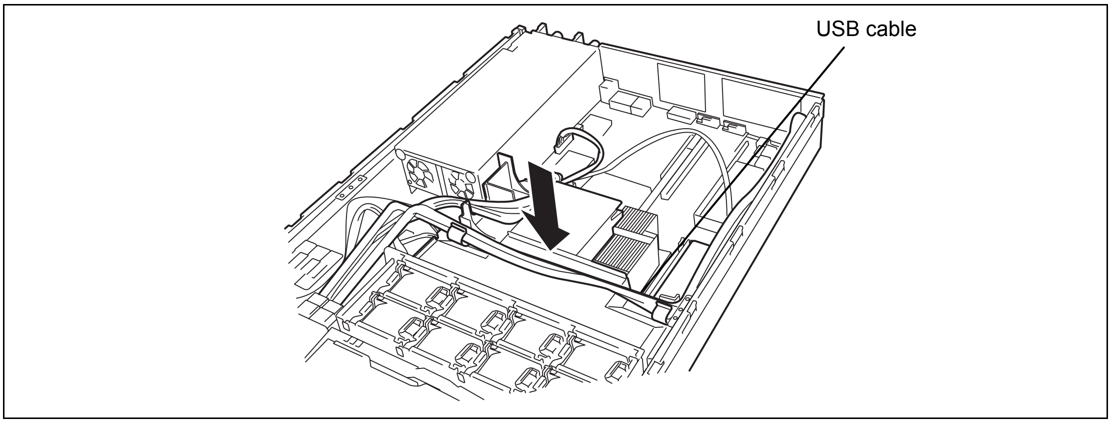
IMPORTANT: Keep the removed dummy memory for future use.

8. Holding the DIMM by the edges, remove it from its anti-static package. Position the DIMM above the socket. Align the small notch at the bottom edge of the DIMM with the key in the socket.

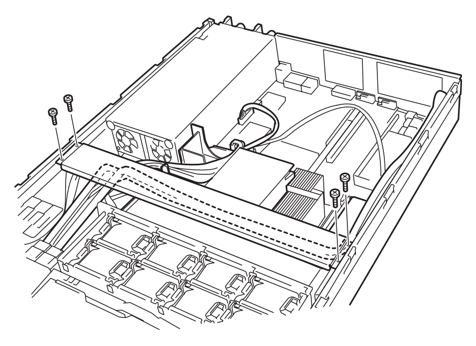
NOTE: Make sure of the orientation of the DIMM. Position the DIMM so that a notch in the bottom edge of the DIMM aligns with the keyed socket. Applying too much pressure can damage the socket. Keyed DIMMs insert only one way.



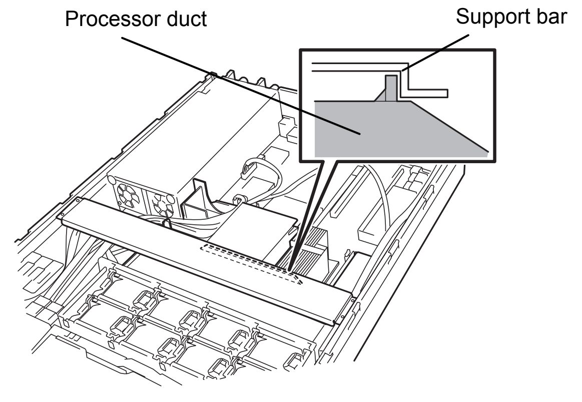
9. Attach the processor duct. Place the USB cable on top of the processor duct.



10. Attach the support bar.



Make sure that the tab of the processor duct is inserted under the support bar.



NOTE: The support bar can spring upwards when freed, resulting in the loss of screws.
Firmly hold the support bar down while removing the screws.

11. Install the components you removed in steps 1 to 3.

12. Power on the server and verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed on page 8-10.

13. Run the BIOS SETUP utility and select [Advanced] → [Memory Configuration] → [Memory Information] to verify that the installed DIMM shows a number. (See page 4-14 for details.)

14. Select [Memory Configuration] → [Memory Retest] on the [Advanced] menu and specify "Yes".

This setting is required to update the hardware configuration information. See page 4-8 for details.

15. If the Windows operating system is in use, set the paging file size to the recommended value (total memory size × 1.5) or a greater value. See page 8-49 for details.

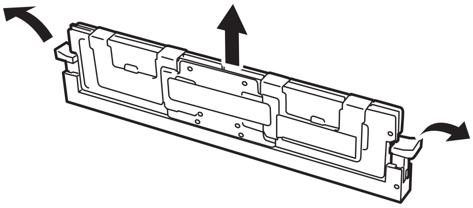
Removal

Remove the DIMM using the following procedure.

NOTE: To remove the failed DIMM, check the error message appearing in POST or NEC ESMPRO to identify the DIMM socket (group) in which the failed DIMM is installed.

16. See page 9-4 to prepare.
17. Pull out the server from the rack (as described on page 9-4).
18. Remove the drive cover and logic cover (as described on page 9-25).
19. Remove the riser card (as described on page 9-51).
20. Remove the four support bar screws, and then remove the support bar (as described in the *Attachment* procedure).
21. Lift the processor duct to remove it (as described in the *Attachment* procedure).
22. Open the clips at each end of the socket from which you remove the DIMM.

    The DIMM pops out of the socket.



23. Hold the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
24. Reinstall all parts removed in Steps 3 to 7.

    See installation procedures for detail explanations.
25. Power on the server and verify that POST displays no error messages.

    If POST displays an error message, take a note on the message and see the POST error messages listed on page 8-10.
26. Run the BIOS SETUP utility and select [Advanced] → [Memory Configuration] → [Memory Retest] → [Enabled] to clear the error information of the removed DIMM. (See page 4-12 for details.)

    This setting is required to update the hardware configuration information. See page 4-15 for details.

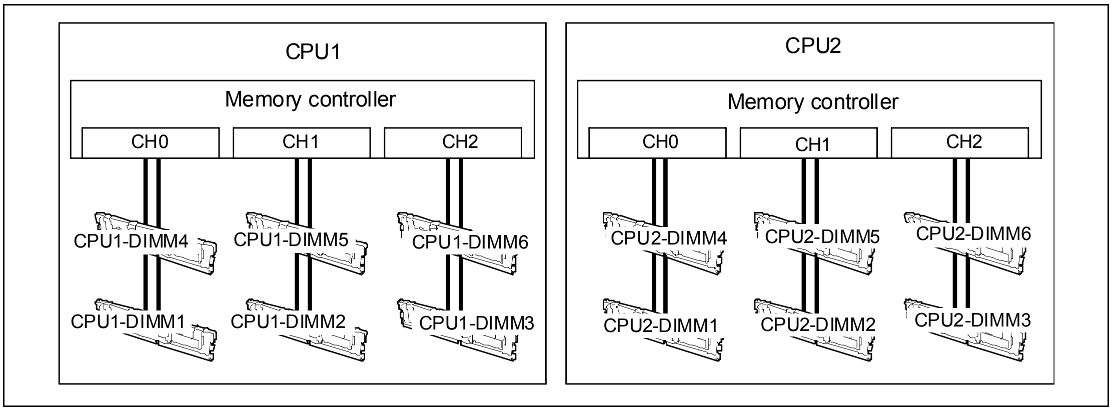
Using the Memory RAS Features

The server has RAS feature including "Standard memory configuration (x4 SDDC ECC memory)", a "memory mirroring feature", a "memory sparing feature", and a "LockStep (x8 SDDC ECC memory) feature". SDDC (Single Device Data Correction) allows automatic correction of memory error (multi-bit error).

IMPORTANT:

- To use the memory mirroring feature or LockStep (x8 SDDC ECC memory) feature, an additional memory stick (N8102-387/388/389/390/391) is required.
- To use x4 SDDC ECC memory feature, an additional memory stick (N8102-371/372/373/374/375) is required.

The memory area on the motherboard of the server is divided into two memory channels as shown in the figure below.


CPU1
Memory controller
CH0
CH1
CH2
CPU1-DIMM4
CPU1-DIMM5
CPU1-DIMM6
CPU1-DIMM1
CPU1-DIMM2
CPU1-DIMM3
CPU2
Memory controller
CH0
CH1
CH2
CPU2-DIMM4
CPU2-DIMM5
CPU2-DIMM6
CPU2-DIMM1
CPU2-DIMM2
CPU2-DIMM3

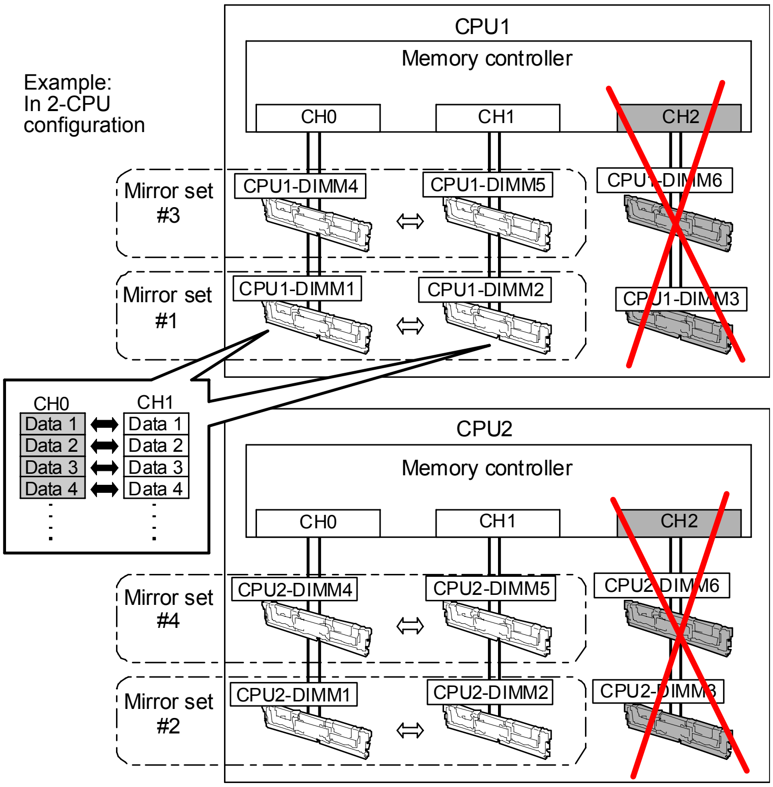
The memory mirroring and LockStep features keep memory redundancy between memory channels by monitoring or altering memory active/inactive status, respectively.

Memory mirroring

The memory mirroring feature writes the same data into two groups of DIMMs corresponding with each other between memory channels (channels 0 and 1) to provide data redundancy.

IMPORTANT:

- The memory mirroring feature uses channels 0 and 1. In memory mirroring configuration, the memory channel 2 of each CPU (CPU1-DIMM3/6, CPU2-DIMM3/6) is disabled.
- To use the Memory Mirroring feature, an additional memory stick (N8102-387/388/389/390/391) is required.


Example:
In 2-CPU configuration
CPU1
Memory controller
CH0
CH1
CH2
Mirror set #3
CPU1-DIMM4
CPU1-DIMM5
CPU1-DIMM6
Mirror set #1
CPU1-DIMM1
CPU1-DIMM2
CPU1-DIMM3
CH0
CH1
Data 1
Data 2
Data 3
Data 4
Data 1
Data 2
Data 3
Data 4
CPU2
Memory controller
CH0
CH1
CH2
Mirror set #4
CPU2-DIMM4
CPU2-DIMM5
CPU2-DIMM6
Mirror set #2
CPU2-DIMM1
CPU2-DIMM2
CPU2-DIMM3

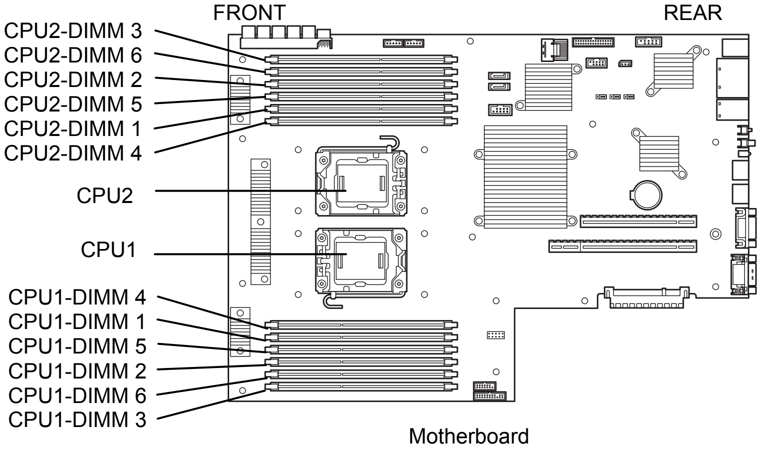
NOTE: The operating system only recognizes a half of the total physical capacity.

The memory mirroring feature can be used under the following conditions:

- Install memory devices on two memory sockets configuring a mirror set.
- All the installed memory devices should have the same capacity.
- Run SETUP (described on page 4-2), change parameters appropriately in the [Mirror] menu selected as shown below, save the settings and exit from SETUP.

  [Advanced] → [Memory Configuration] → [Memory RAS Mode] → [Mirror]
- After SETUP finishes, rerun SETUP and make sure that the installed DIMM status is [Mirror].
- Install memory devices in the following order.

	1-CPU configuration	2-CPU configuration
CPU2-DIMM 3		
CPU2-DIMM 6		
CPU2-DIMM 2		2
CPU2-DIMM 5		4
CPU2-DIMM 1		2
CPU2-DIMM 4		4
CPU1-DIMM 4	2	3
CPU1-DIMM 1	1	1
CPU1-DIMM 5	2	3
CPU1-DIMM 2	1	1
CPU1-DIMM 6		
CPU1-DIMM 3		


FRONT
REAR
CPU2-DIMM 3
CPU2-DIMM 6
CPU2-DIMM 2
CPU2-DIMM 5
CPU2-DIMM 1
CPU2-DIMM 4
CPU2
CPU1
CPU1-DIMM 4
CPU1-DIMM 1
CPU1-DIMM 5
CPU1-DIMM 2
CPU1-DIMM 6
CPU1-DIMM 3
Motherboard

The following mirroring cannot be configured:

- Memory mirroring within a specific memory channel

Notes on configuring memory mirroring

In memory mirroring configuration, [Memory RAS Mode] menu is changed from "Mirror" to "Independent" in the following cases:

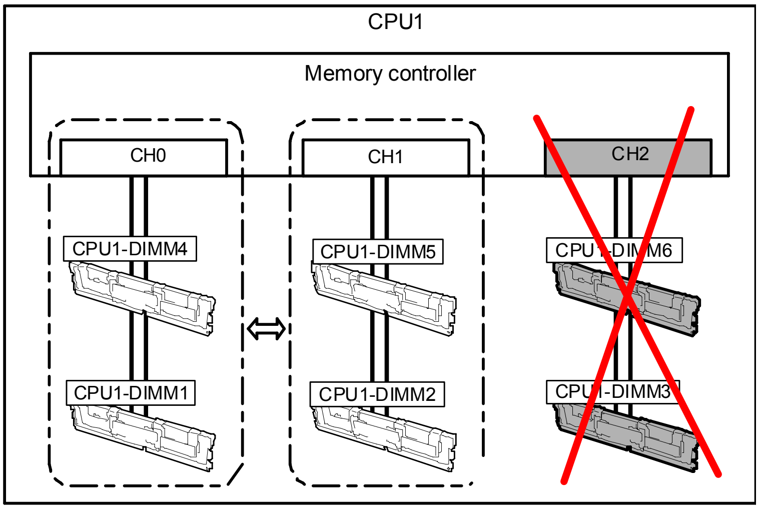
- When you additionally install DIMMs that unable to configure memory mirroring
- When you remove DIMMs that takes down the memory mirroring

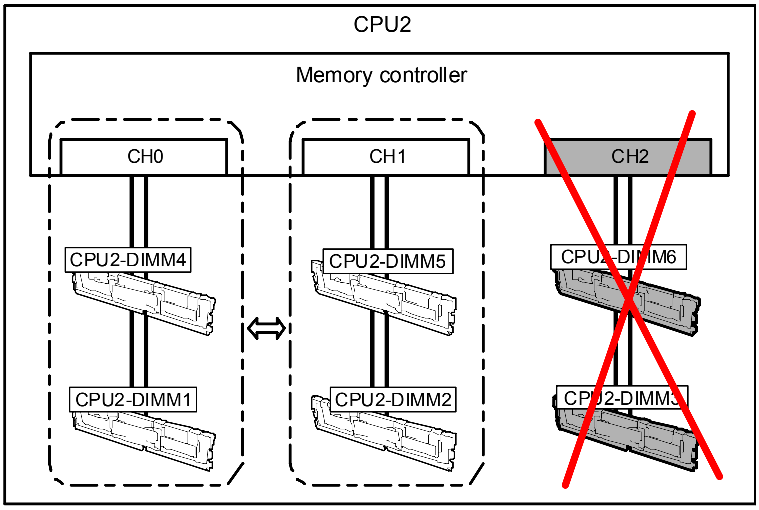
Memory LockStep feature (x8 SDDC)

In LockStep feature, the DIMMs in two groups corresponding to two memory channels (channels 0 and 1) is multiplexed and operated in parallel to enable x8 SDDC (x8 Single Device Data Correction). With this feature, a single device can detect and correct one to eight-bit error.

IMPORTANT:

- The LockStep feature uses channels 0 and 1. When setting up this feature, memory channel 2 of each CPU (CPU1-DIMM3/6, CPU2-DIMM3/6) cannot be used. It is necessary to install an additional N8102-387/388/389/390/391 memory stick.

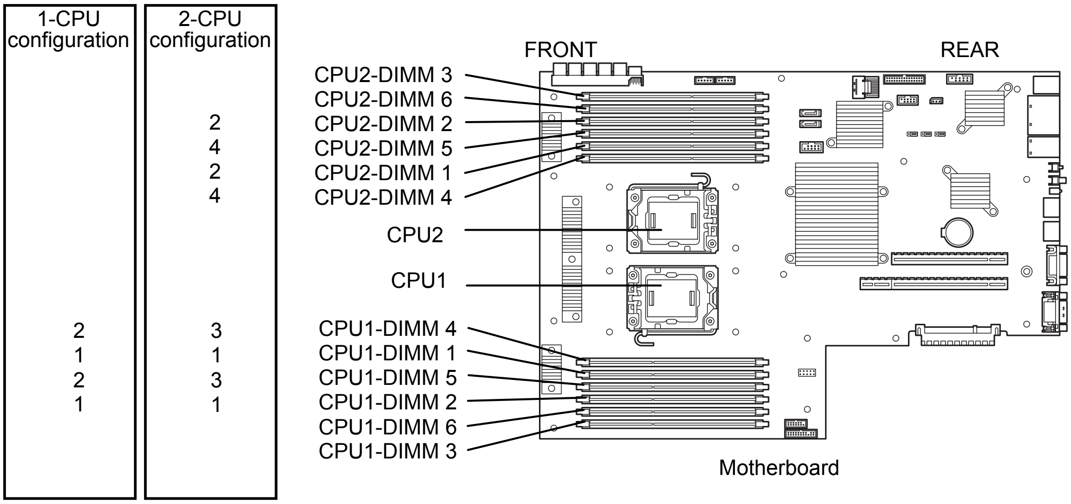

CPU1
Memory controller
CH0
CH1
CH2
CPU1-DIMM4
CPU1-DIMM5
CPU1-DIMM6
CPU1-DIMM1
CPU1-DIMM2
CPU1-DIMM3


CPU2
Memory controller
CH0
CH1
CH2
CPU2-DIMM4
CPU2-DIMM5
CPU2-DIMM6
CPU2-DIMM1
CPU2-DIMM2
CPU2-DIMM3

The LockStep feature can be used under the following conditions:

- Install two DIMMs that operate in parallel in memory socket.
- All the installed DIMMs should have the same capacity.
- Run SETUP (described on page 4-2), change parameters appropriately in the menu selected as shown below, save the settings and exit from SETUP.

  Select [Advanced] → [Memory Configuration] → [Memory RAS Mode] → [Lock Step].
- After SETUP finishes, rerun SETUP and make sure that the installed DIMM status is [Lock Step].
- Install memory devices in the following order:


1-CPU configuration
2-CPU configuration
2
4
2
4
2
1
2
1
3
1
3
1
FRONT
REAR
CPU2-DIMM 3
CPU2-DIMM 6
CPU2-DIMM 2
CPU2-DIMM 5
CPU2-DIMM 1
CPU2-DIMM 4
CPU2
CPU1
CPU1-DIMM 4
CPU1-DIMM 1
CPU1-DIMM 5
CPU1-DIMM 2
CPU1-DIMM 6
CPU1-DIMM 3
Motherboard

The following LockStep cannot be configured:

- LockStep between memory channels of different memory controllers (CPU)
- LockStep within the same memory channel

Notes on configuring LockStep

In LockStep configuration, [Memory RAS Mode] menu is changed from "LockStep" to "Independent" in the following cases:

- When you additionally install DIMMs that unable to configure LockStep
- When you remove DIMMs that takes down the LockStep

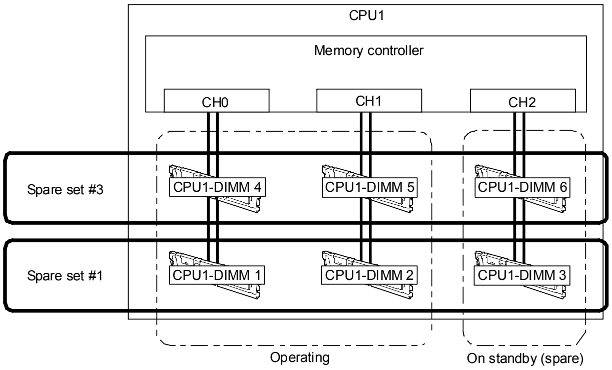
Memory sparing

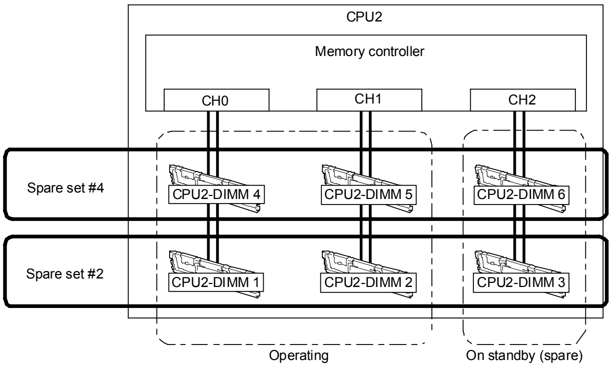
Memory sparing is a feature whereby channel 2 of the memory controller in each CPU is designated as a "spare" channel and the DIMMs (memories) that use that channel are put on standby so that operations can be automatically switched to a standby DIMM if a correctable error occurs in one of the DIMMs operating under the control of the memory controller, allowing processing to continue unimpeded.

IMPORTANT:

- The memory sparing feature is not supported by the N8100-1644F/1650F.
- Additional memory sticks (N8102-371/372/373/374/375) are required to use the memory sparing feature.
- The capacity of the additional memory sticks must match the capacity of the other memory sticks used in the server.

Example: Memory sparing in a 2-CPU configuration


CPU1
Memory controller
CH0
CH1
CH2
Spare set #3
CPU1-DIMM 4
CPU1-DIMM 5
CPU1-DIMM 6
Spare set #1
CPU1-DIMM 1
CPU1-DIMM 2
CPU1-DIMM 3
Operating
On standby (spare)

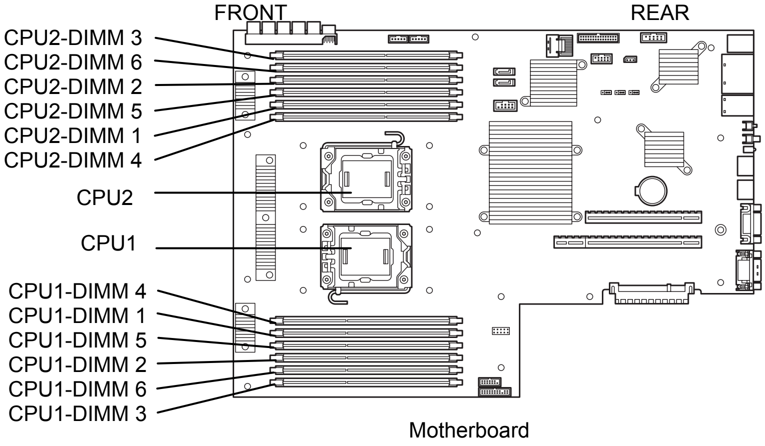

CPU2
Memory controller
CH0
CH1
CH2
Spare set #4
CPU2-DIMM 4
CPU2-DIMM 5
CPU2-DIMM 6
Spare set #2
CPU2-DIMM 1
CPU2-DIMM 2
CPU2-DIMM 3
Operating
On standby (spare)

NOTE: The capacity of the DIMMs recognized by the operating system is less than the DIMMs' physical capacity. The capacity recognized by the operating system depends on the number of memory sticks inserted and the capacity of each stick.

Observe the following when using the memory sparing feature:

- The capacity of the additional memory sticks (DIMMs) must the same as the capacity of the memory sticks installed in the server.
- Launch the SETUP utility (referring to System BIOS SETUP on page 4-2) and change the parameter below. Save the changed parameter and exit SETUP.
  [Advanced] → [Memory Configuration] → [Memory RAS Mode] → [Sparing]
- After exiting SETUP, launch SETUP again and check that the added DIMMs have the status "Sparing".
- Insert the additional memory sticks in the following sequence:

	1-CPU configuration	2-CPU configuration
CPU2-DIMM 3		2
CPU2-DIMM 6		4
CPU2-DIMM 2		2
CPU2-DIMM 5		4
CPU2-DIMM 1		2
CPU2-DIMM 4		4
CPU1-DIMM 4	2	3
CPU1-DIMM 1	1	1
CPU1-DIMM 5	2	3
CPU1-DIMM 2	1	1
CPU1-DIMM 6	2	3
CPU1-DIMM 3	1	1


FRONT
REAR
CPU2-DIMM 3
CPU2-DIMM 6
CPU2-DIMM 2
CPU2-DIMM 5
CPU2-DIMM 1
CPU2-DIMM 4
CPU2
CPU1
CPU1-DIMM 4
CPU1-DIMM 1
CPU1-DIMM 5
CPU1-DIMM 2
CPU1-DIMM 6
CPU1-DIMM 3
Motherboard

Memory sparing cannot be used in the following case:

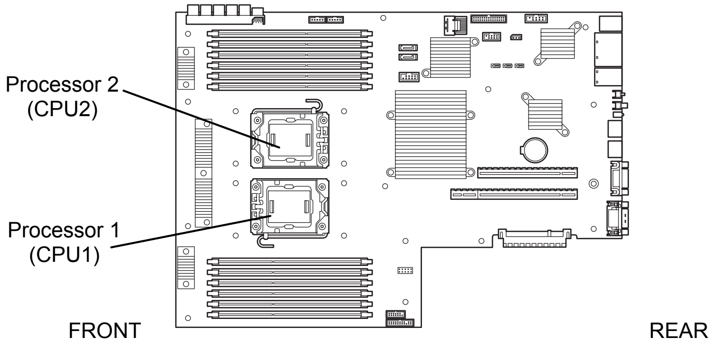
- There are DIMMs of varying capacities installed in the server.

PROCESSOR (CPU)

The server may have another CPU installed in addition to the standard CPU.

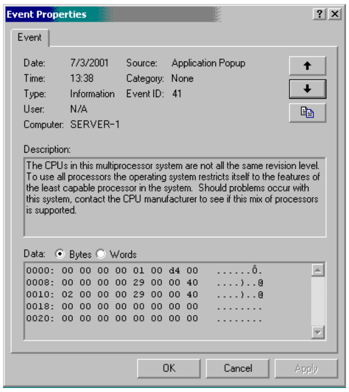
IMPORTANT:

- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU pins by a bare hand or place the CPU directly on the desk. For static notes, see page 9-3.
- Do not operate the system until confirming that the additionally installed CPU is in normal state.
- Make sure to use the CPU authorized by NEC. Installing a third-party CPU might cause a failure of the CPU as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.



Motherboard

NOTE: If the different revision of the processor is installed in the multiprocessor system, Windows logs the following information every startup. If this message is logged, it is no problem for operation.



Date: 7/3/2001 Source: Application Popup
Time: 13:38 Category: None
Type: Information Event ID: 41
User: N/A
Computer: SERVER-1

Description:

The CPUs in this multiprocessor system are not all the same revision level. To use all processors the operating system restricts itself to the features of the least capable processor in the system. Should problems occur with this system, contact the CPU manufacturer to see if this mix of processors is supported.

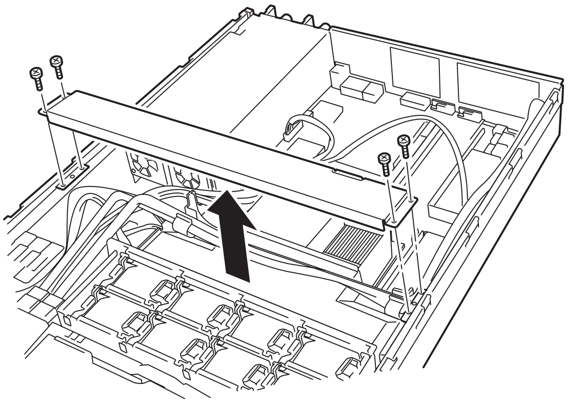
Data: ● Bytes ○ Words

```
0000: 00 00 00 00 01 00 d4 00   ......Ô.
0008: 00 00 00 00 29 00 00 40   ....)..@
0010: 02 00 00 00 29 00 00 40   ....)..@
0018: 00 00 00 00 00 00 00 00   ........
0020: 00 00 00 00 00 00 00 00   ........
```

Installation

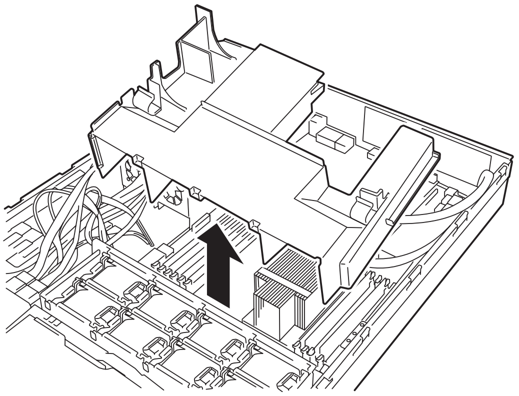
Take the following steps to install the CPU.

1. See page 9-4 to prepare.
2. Pull out the server from the rack (as described on page 9-4).
3. Remove the drive cover and logic cover (as described on page 9-25).
4. Remove the PCI riser card (as described on page 9-51).
5. Remove the four support bar screws, and then remove the support bar.



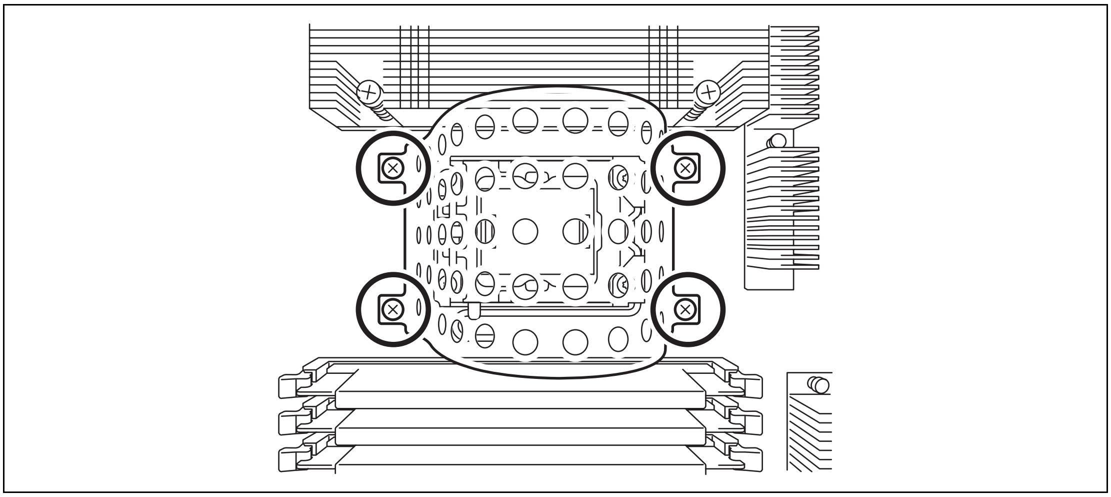
NOTE:
The support bar can spring upwards when freed, resulting in the loss of screws.
Firmly hold the support bar down while removing the screws.

6. Remove the fan duct from the chassis.



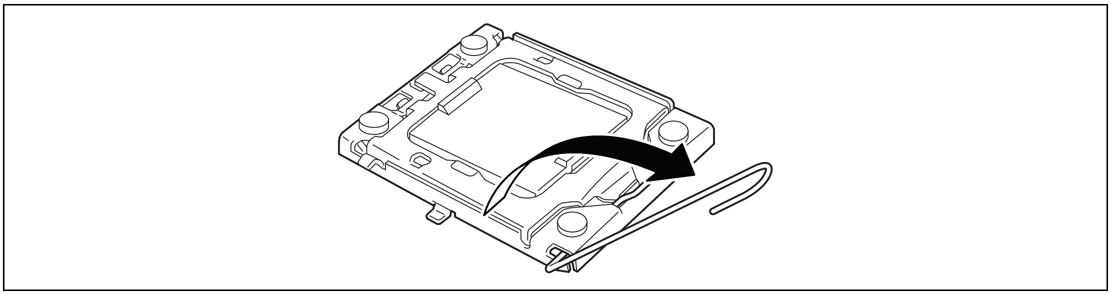
7. Locate the CPU socket which you are going to install CPU.

8. Remove the four screws, and remove the CPU dummy cover.

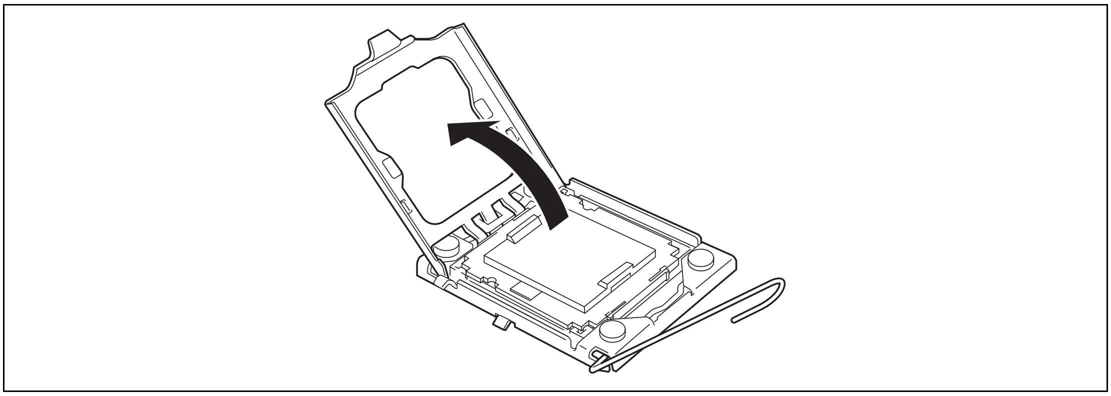


IMPORTANT: Keep the removed cover for future use.

9. Open the socket lever by pushing the lever down and away from the socket.

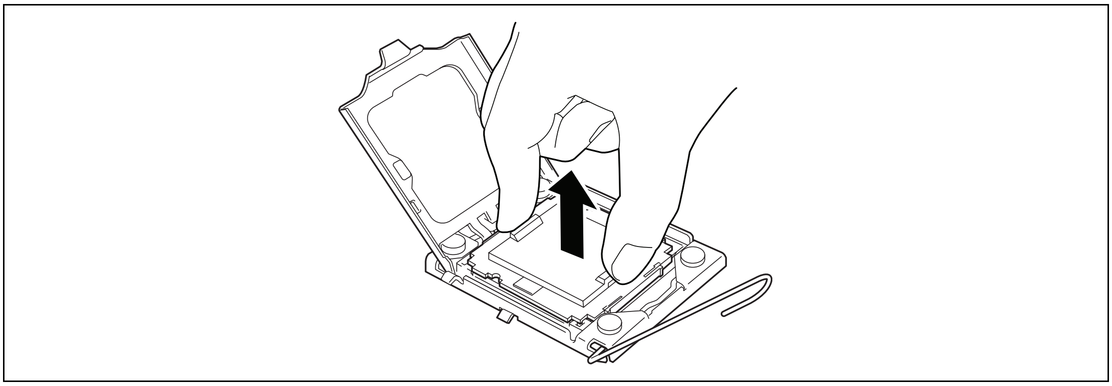


10. Lift the load plate.



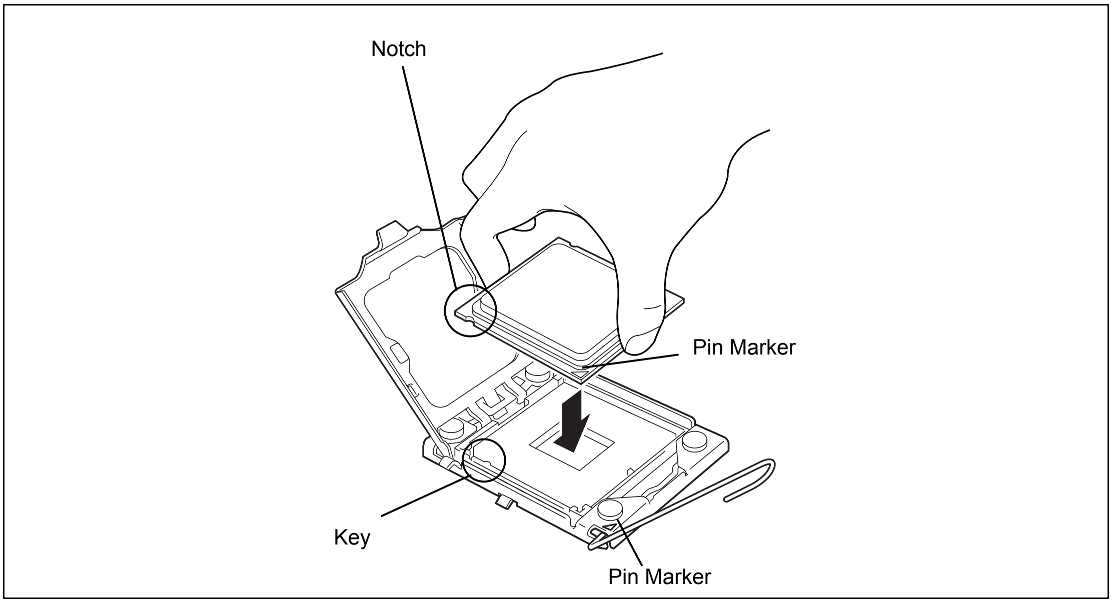
IMPORTANT: Do not touch the socket contacts.

11. Remove the protective socket cover from the load plate.



IMPORTANT: Do not discard the protective socket cover. Always replace the socket cover if the processor is removed from the socket.

12. Hold a new processor with your thumb and index fingers and place it on the socket carefully as shown in the figure below.

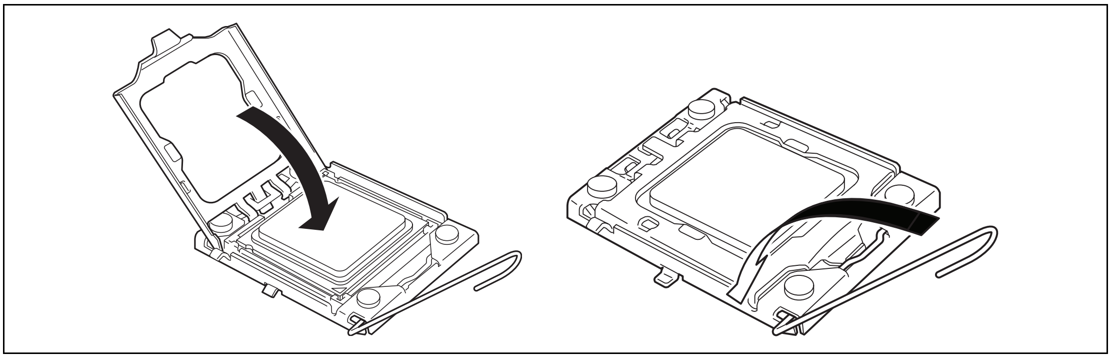


NOTES:

- Align notches with the socket.
- Lower the processor straight down without tilting or sliding it in the socket.

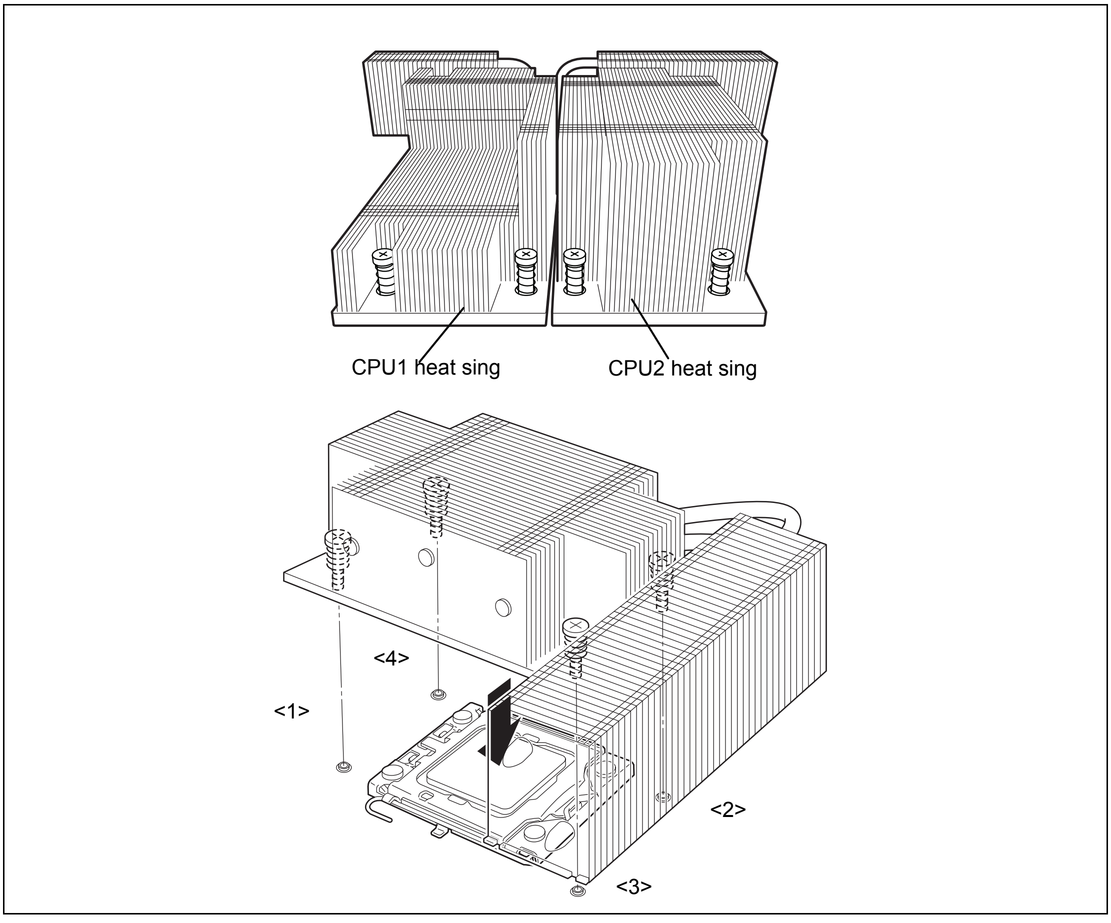
IMPORTANT: Hold the processor only at the edges, being careful not to touch the bottom of the processor.

13. Slightly press the processor on the load plate, close the load plate, and then engage the socket lever.

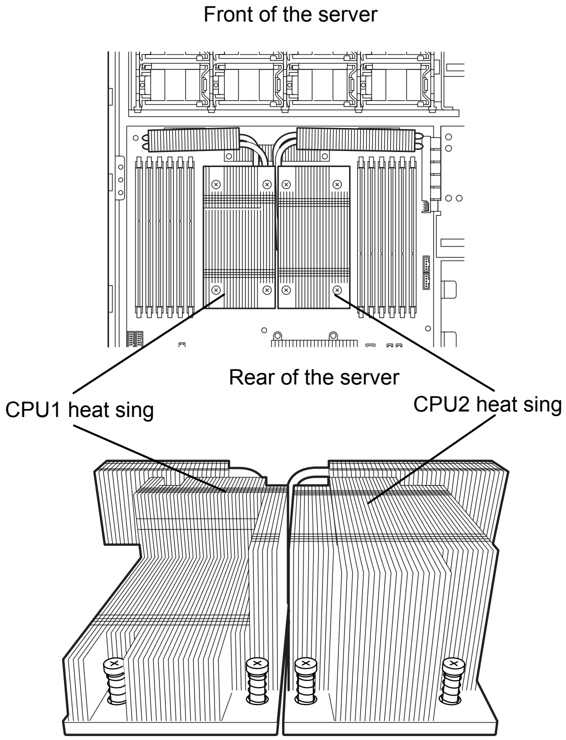


14. Put the heat sink on CPU and fix the heat sink with four screws.

Check the orientation of the heat sink, and then tighten the screws.
Make sure that the screw aligns with the screw hole. If not, the screw may damage the motherboard.



NOTE: Be aware of direction of heat sink (see figure below).


Front of the server
Rear of the server
CPU1 heat sing
CPU2 heat sing

---

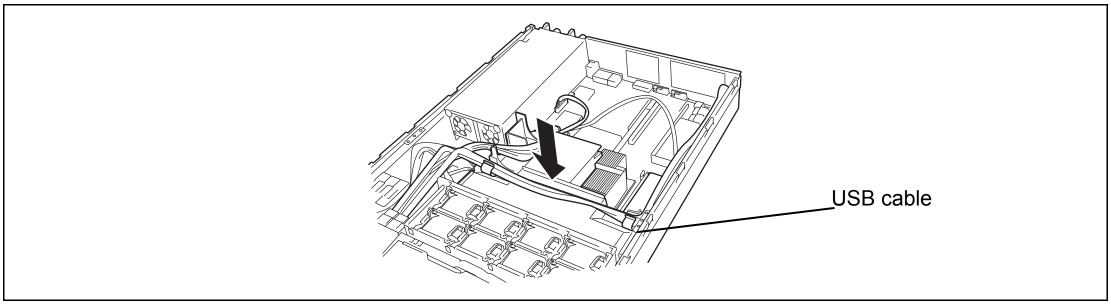
15. Make sure that the heat sink is level.

NOTES:

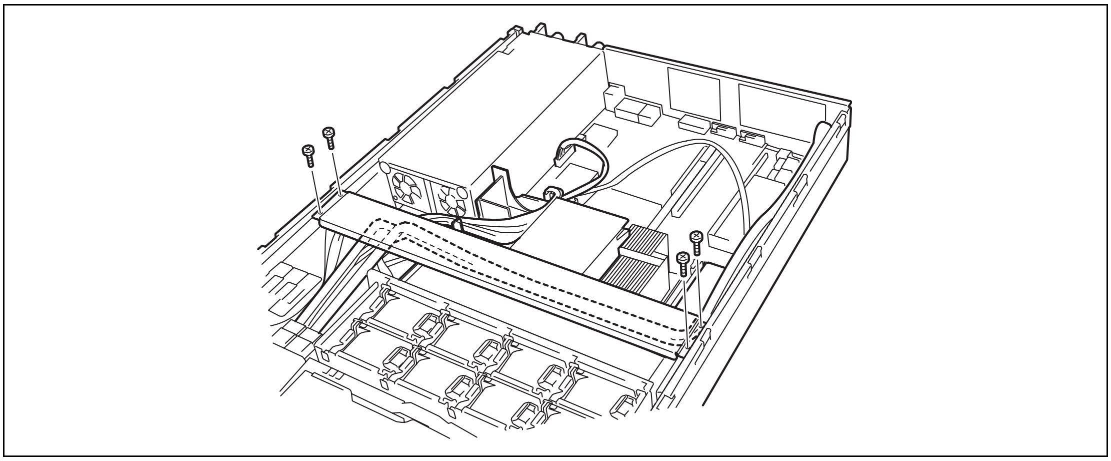
- If the heat sink is not level, remove it, and then install it again. The following probably causes the heat sink not to be level:
  - The CPU is not positioned correctly.
  - All screws are not completely tightened.
- Do not move the secured heat sink.

---

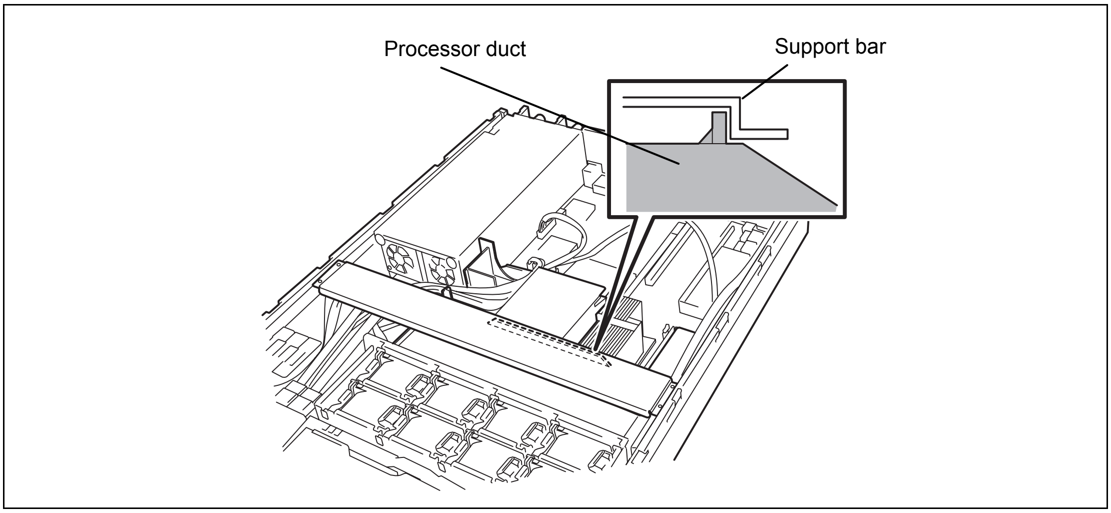
16. Reinstall the processor duct.
Place the USB cable on top of the processor duct.



17. Attach the support bar.
Run the USB cable through the groove in the support bar.



Make sure that the tab of the processor duct is inserted under the support bar.


Processor duct
Support bar

NOTE:

The support bar can spring upwards when freed, resulting in the loss of screws.

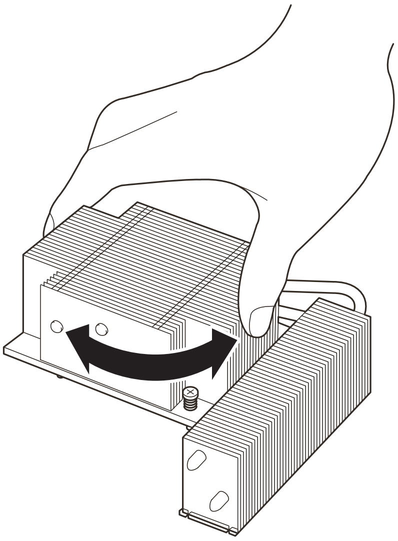
Firmly hold the support bar down while removing the screws.

Removal

To remove the CPU, prepare the removal referring to steps 1 and 6 in the installation procedure and do the reverse procedure of steps 15 to 8.

IMPORTANT:

- Do not remove any CPU unless it is failed.
- After the operation, heat may make the cool seat at the bottom of the heat sink adhere to the CPU. To remove the heat sink from the CPU, first turn the heat sink to the left and right lightly to make sure that the heat sink can be apart from the CPU. Removing the heat sink with it adhering to the CPU might cause the CPU and/or socket to fail.



Do the following procedure if a CPU is removed (or replaced).

1. When a CPU is replaced, select menus "Main" – "Processor Settings" to confirm that the ID, L2 Cache, and L3 Cache of the additional CPU are defined normally (described on page 4-15).

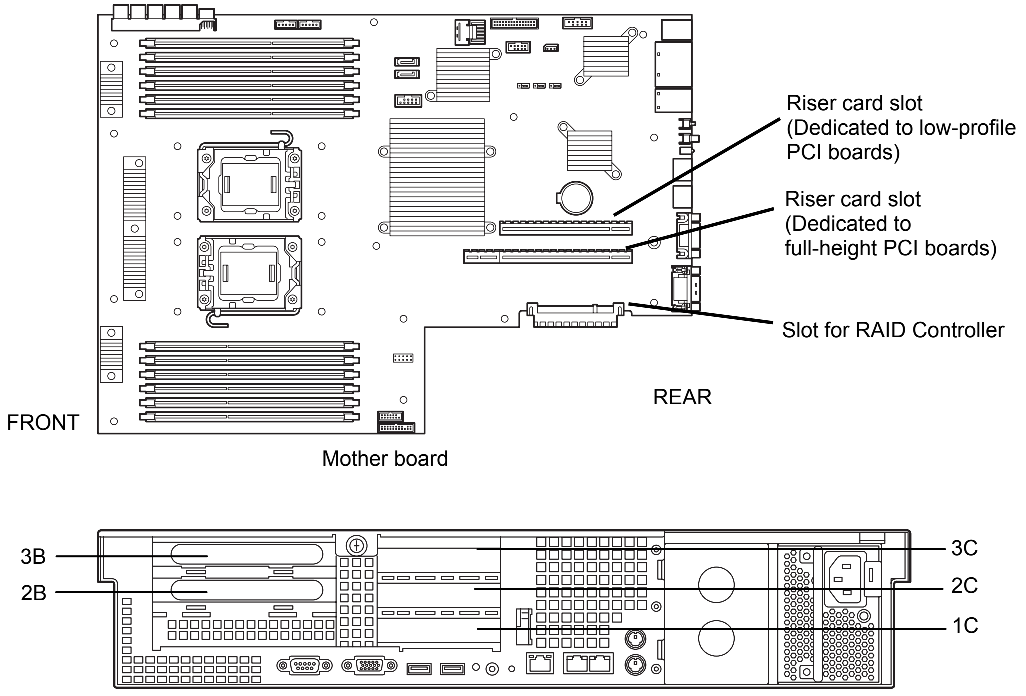
PCI CARD

On the motherboard, the server has a riser card assembly that enables installation of PCI cards and a RAID controller-dedicated slot that enables installation of a RAID controller. The riser card assembly can hold up to two full-height PCI boards, three low-profile PCI boards, and one RAID controller (for a total of six PCI boards).

Insert PCI cards for network extension and file device function extension into PCI card slots in each riser card.

IMPORTANT:

- The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI card terminals or on-board parts by a bare hand or place the PCI card directly on the desk. For static notes, see page 9-3.
- Some restrictions are imposed on the combination of PCI cards which can be installed in the server. Contact your service representative for details.
- A riser card is designed for installing only low-profile PCI cards or full-height PCI cards. Before installing a PCI card, make sure of the card specification.
- If the SCSI controller, RAID controller, LAN card (for network boot), or Fibre Channel controller is not connected with the hard disk drive that contains OS, be sure to disable Option ROM for that card. See page 4-2 for details.


Riser card slot
(Dedicated to low-profile
PCI boards)
Riser card slot
(Dedicated to
full-height PCI boards)
Slot for RAID Controller
REAR
FRONT
Mother board
3B
2B
3C
2C
1C

Notes

Observe the following notes on installing/removing a PCI card:

- Do not touch the terminals of the riser cards and the leads of electronic components with your bare hand. Fingerprints and dust left on them cause the server to malfunction due to a connection failure or damage to the leads.
- A riser card is designed for installing only low-profile PCI cards or full-height PCI cards. Before installing a PCI card, make sure of the card specification.
- PCI slot number "1C" is assigned to the riser card for low-profile PCI cards, "1B" is assigned to the riser card for full-height PCI cards, and "0A" is assigned to the RAID controller-dedicated slot.
- The system detects the boot devices in order of the PCI bus slots 1B (full-height PCI card) and then 1C (low-profile PCI card).
  When a standard riser card is attached, the search order is:
  2B → 3B → 1C → 2C → 3C

  However, when the N8116-21 riser card (PCI-X) is attached, the slots are searched in the following order:
  3B → 2B → 1C → 2C → 3C
- The PCI devices of the same type (including onboard PCI device) may be recognized in different order from that described above, depending on OS or RAID System BIOS Utility. Check the slot location of PCI device by PCI bus number, device number and function number shown in the table below.

PCI device	Bus number	Device number	Function number
Onboard NIC1	1h	0	0
Onboard NIC2	1h	0	1
Slot 1C	40h	0	X
Slot 2C	50h	0	X
Slot 3C	70h	0	X
Slot 2B	10h*	9	X
Slot 3B	30h*	0	X
Slot 2B (N8116-21)	30h	0	X
Slot 3B (N8116-21)	11h	1	X
RAID-dedicated slot	60h	0	X

* Depending on which PCI cards are inserted into slots 2B and 3B, the above PCI bus numbers might not be used.

- Set "Disabled" for the optional ROM of a LAN device not to be booted by using the BIOS SETUP utility.
- If an additional LAN device is installed, it is hard to push the catch of the connector with your finger that is connected to the LAN port. Disconnect the connector pushing the catch with a standard screwdriver. At this time, be very careful for the screwdriver not to damage the LAN port or other ports.
- If a bootable PCI card (e.g., a RAID controller, SCSI controller, or LAN card) is

additionally installed, the boot priority is changed. After the additional installation, start the BIOS SETUP utility, select [Boot] and set the new boot priority.

- If a device that can be booted (PCI card, USB device, etc.) is added, the boot priority might change. If the priority has changed, use [Hard Drive BBS Priorities] on the [Boot] menu of BIOS SETUP to specify a higher priority for the boot device.
  [Boot] → [Hard Drive BBS Priorities] → Check the display.

  If the boot device is an HDD under N8103-129/130:
  (Bus 07 Dev 00) PCI RAID Adapter

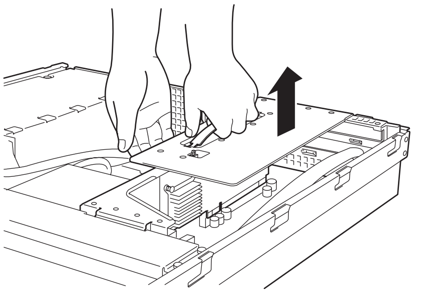
Installation

Take the following steps to install a PCI card on the riser card:

IMPORTANT:

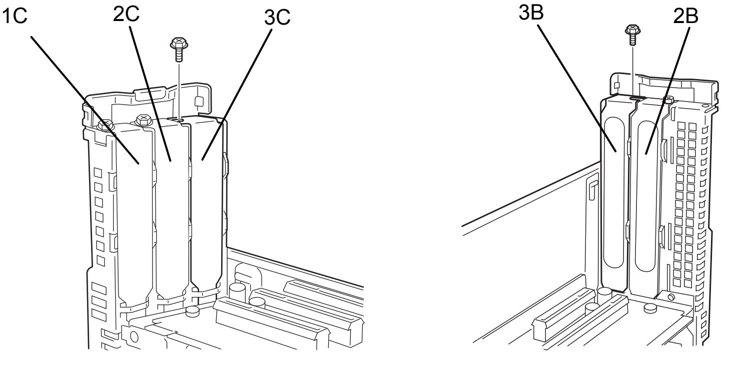
- Each riser card supports low-profile or full-height PCI cards. Before installing a PCI card, confirm that the type of the PCI card.
- When installing a PCI card, confirm that the card connector matches the connector of the riser card.

1. See page 9-4 to prepare.
2. Pull out the server from the rack (as described on page 9-4).
3. Remove the logic cover (as described on page 9-25).
4. Hold the riser card handle and bracket as shown in the figure below, and remove the riser card.
   If the card is hard to remove, hold down the server while lifting the card.



NOTE: Be very careful not to contact the other component.

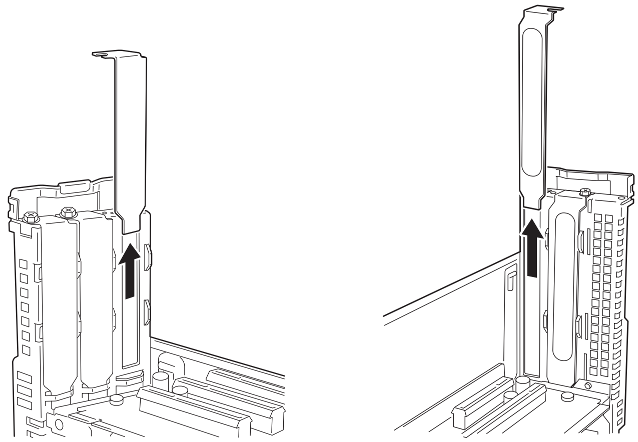
5. Check the insertion positions in the table on the previous page.
6. Remove the screw from the PCI slot cover at the insertion position.



Low-profile riser card

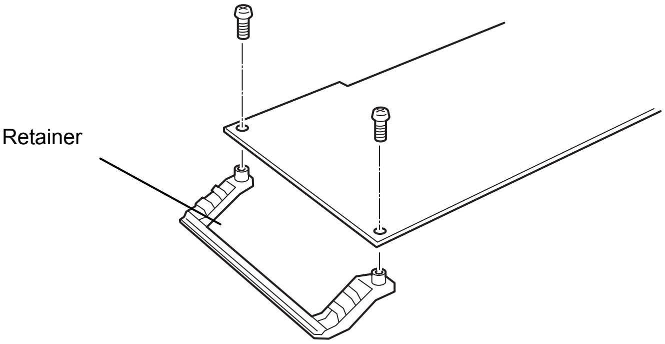
Full-height side riser card

7. Remove the screw from the riser card, and remove the additional slot cover.


Low-profile riser card
Full-height side riser card

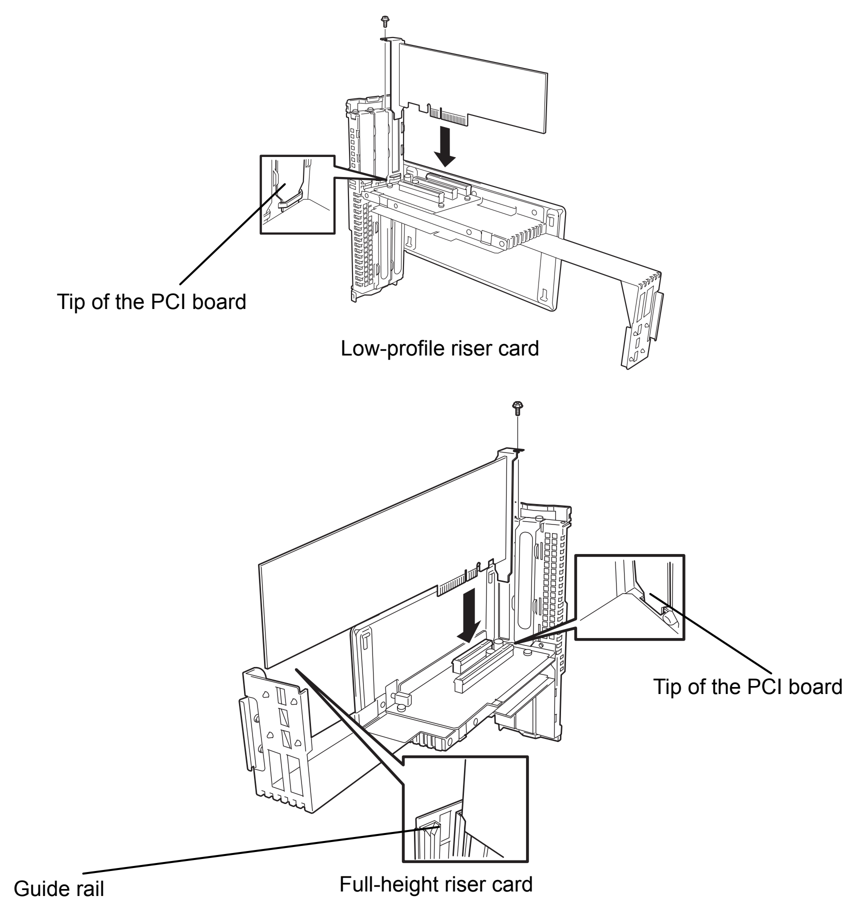
NOTE: Keep the removed additional slot cover for future use.

8. Only for the full-height, full-length type
When inserting a full-height, full-length PCI card, remove the card retainer.



9. Install the PCI board on the riser card.

Align the PCI board terminal section with the riser card slot, and firmly push the PCI board until it is fully seated.


Tip of the PCI board
Low-profile riser card
Tip of the PCI board
Guide rail
Full-height riser card

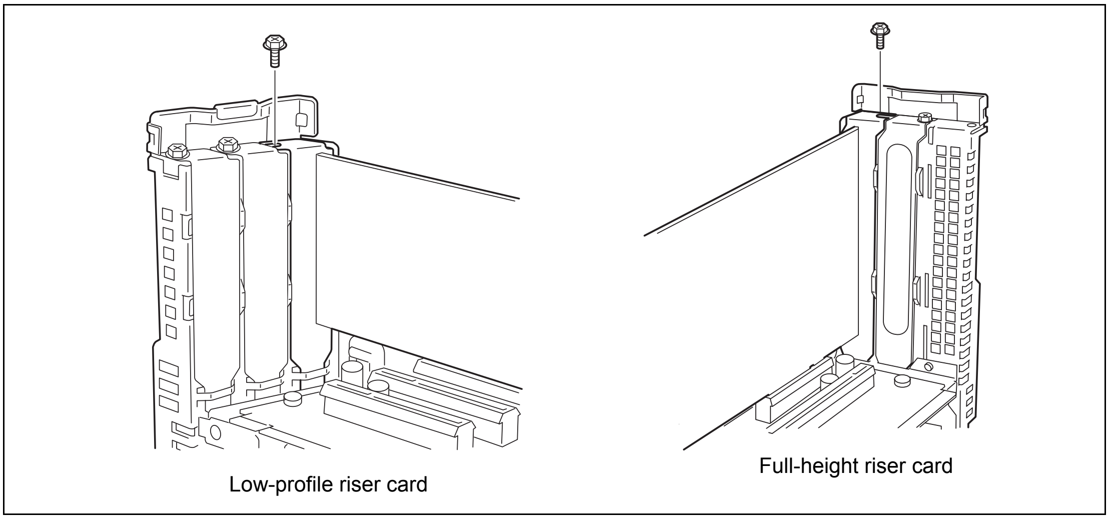
IMPORTANT:

- Do not touch the terminals of the riser cards and PCI cards with your bare hand. Fingerprints and dust left on them cause the server to malfunction.
- If you are unable to install a PCI card correctly, remove it, and then install it again. Be careful not to apply excess force to a PCI card or riser card. Doing so may damage the card.

NOTES:

- Confirm that the end of the PCI card bracket is inserted in the frame slot of the riser card.
- Some PCI cards have terminal section that extends over the mating connector.

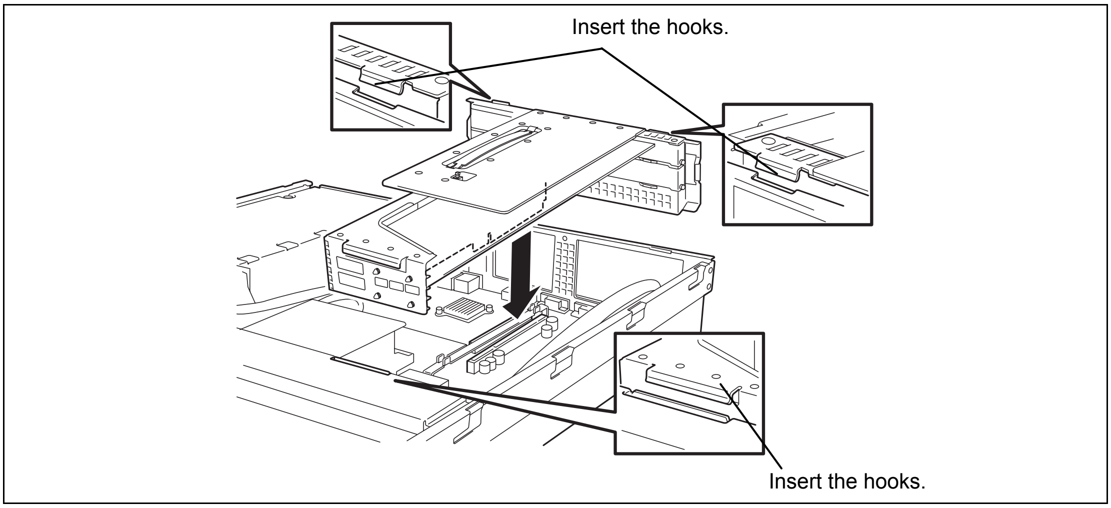
10. Secure the PCI card with the screw you removed in step 5.


Low-profile riser card
Full-height riser card

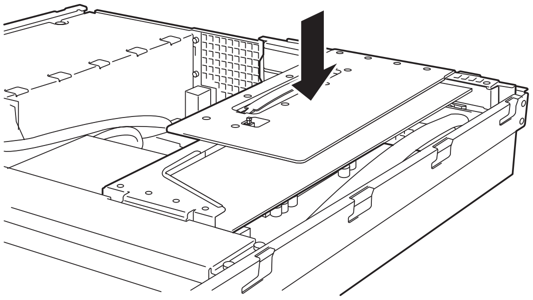
IMPORTANT: This step is to protect the terminals of the riser card from dust or fingerprints. Dust and fingerprints left on them cause the server to malfunction.

11. Insert the riser module assembly into the slot on the motherboard.

Align the riser card terminal section with the slot on the motherboard, and firmly push the riser module until it is fully seated.


Insert the hooks.
Insert the hooks.

12. After inserting the riser card, firmly press on it with your fingers to connect it.



13. Install the components you removed previously.

14. Verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed on page 4-15.

15. Run the BIOS SETUP utility and select "Yes" for [Advanced] → [Reset Configuration Data].

This setting is required to update the hardware configuration information. See page 4-8 for details.

Removal

Remove a PCI card in reverse order of the installation steps. After removal, use the [Boot] menu of the BIOS setup utility to set the boot order (as described on page 4-33).

Installing RAID Controller

Take the following steps to install the optional RAID controller in the RAID Controller slot.

If using an optional RAID controller (N8103-129/130)

For a detailed description, see the instruction manual that came with your optional RAID controller (N8103-129/130).

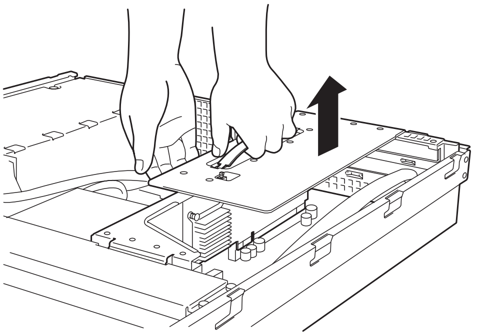
IMPORTANT: The optional RAID controller is an electronic component that is extremely sensitive to static electricity. Before handling the controller, touch the metal frame of the server or ground yourself in some other way to discharge static electricity from your body. In addition, do not touch the terminals of the RAID controller card with your bare hands or place the card on a desk without anything to protect it. Details about static electricity are provided on page 9-3.

NOTE: When inserting an optional RAID controller, on the

[Advanced] menu of the BIOS setup utility, make sure that the [PCI Slot *xx* ROM] parameter (where *xx* is the PCI slot number) under [PCI Configuration] is set to [Enabled].

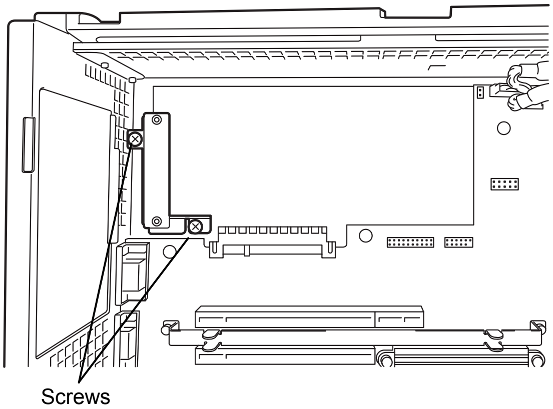
IMPORTANT: When N8103-129/130 is inserted, do not switch to the hibernation or standby mode.

1. See page 9-4 to prepare.
2. Pull out the server from the rack (as described on page 9-4).
3. Remove the logic cover (as described on page 9-25).
4. Hold the riser card handle and bracket as shown in the figure on the right, and remove the riser card.
   If the card is hard to remove, hold down the server while lifting the card.

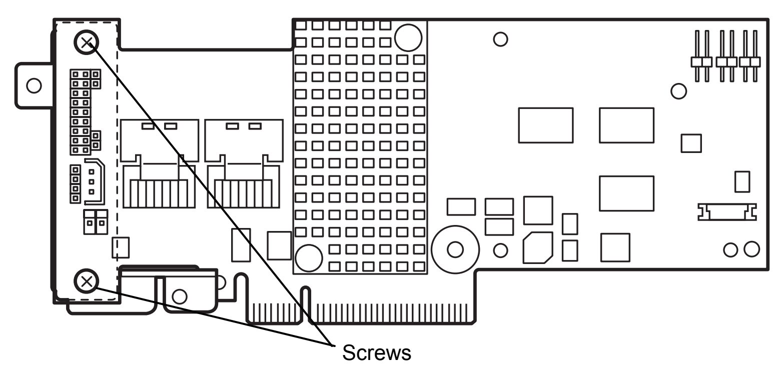


IMPORTANT: Carefully remove the riser card so as not to contact any other components.

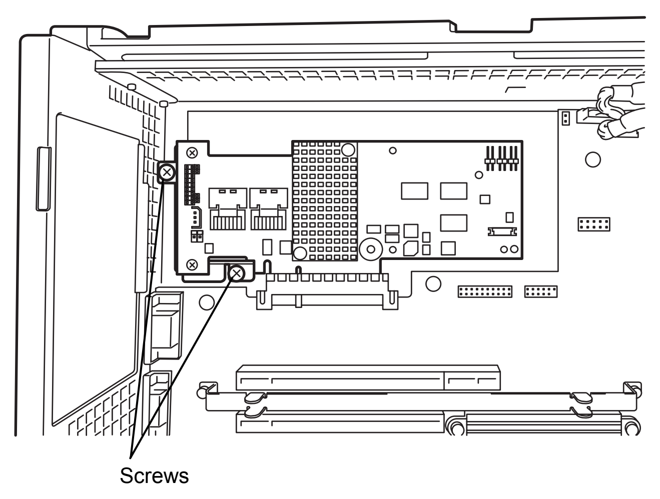
5. Remove the bracket from the server.



6. Attach the RAID controller to the bracket that was removed from the server chassis. Use the screws removed in step 6.



7. Install the RAID controller in the server chassis, and secure it with the screws that were used to secure the bracket.



8. Install the components you removed.

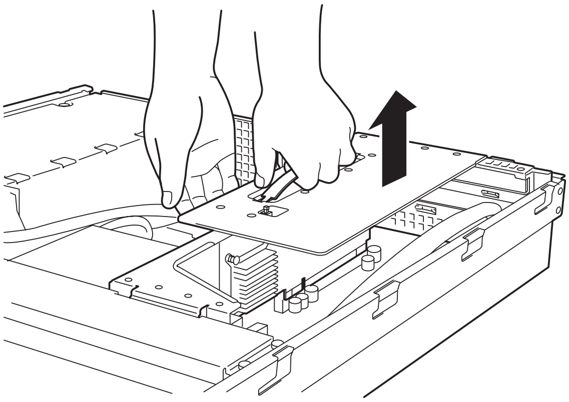
IMPORTANT:

- This server does not have any connectors to which the connectors of LEDs for indicating disk access, such as for the RAID controller, can be connected.
- If a RAID controller is connected, use the [Boot] menu of the BIOS setup utility to set the controller's boot priority to the eighth item or an item that has higher priority. If the RAID controller is specified as the ninth item or an item that has lower priority, it will not be possible to open the RAID controller configuration menu.

Installing Additional Battery for RAID Controller

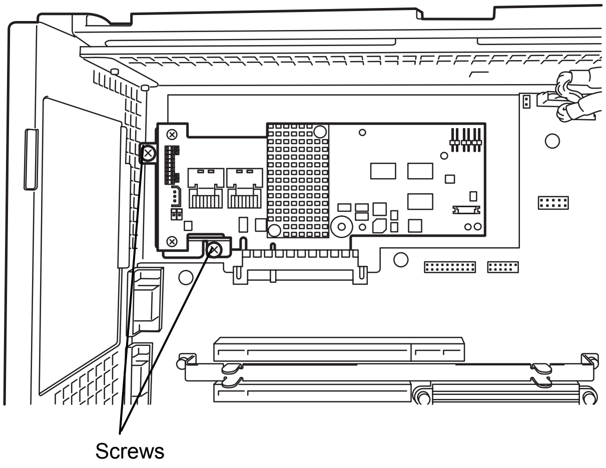
Take the following steps to install an additional battery for RAID controller.

1. See page 9-4 to prepare.
2. Pull out the server from the rack (as described on page 9-4).
3. Remove the logic cover (as described on page 9-25).
4. Hold the riser card handle and bracket as shown in the figure on the right, and remove the riser card.
   If the card is hard to remove, hold down the server while lifting the card.

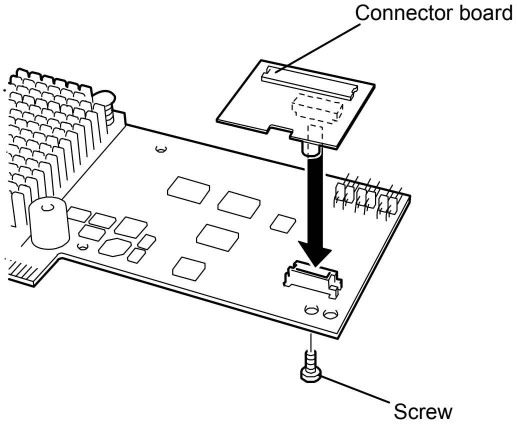


IMPORTANT: Carefully remove the riser card so as not to contact any other components.

5. Disconnect cables from the RAID controller.
6. Remove screws from the RAID controller, and then remove the RAID controller.

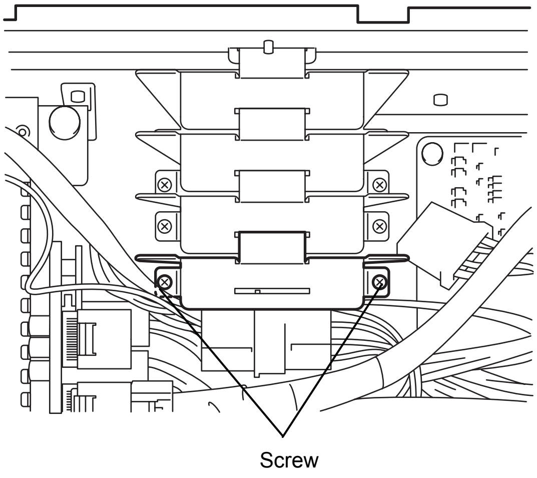


7. Install the connector board provided with the additional battery to the RAID controller.

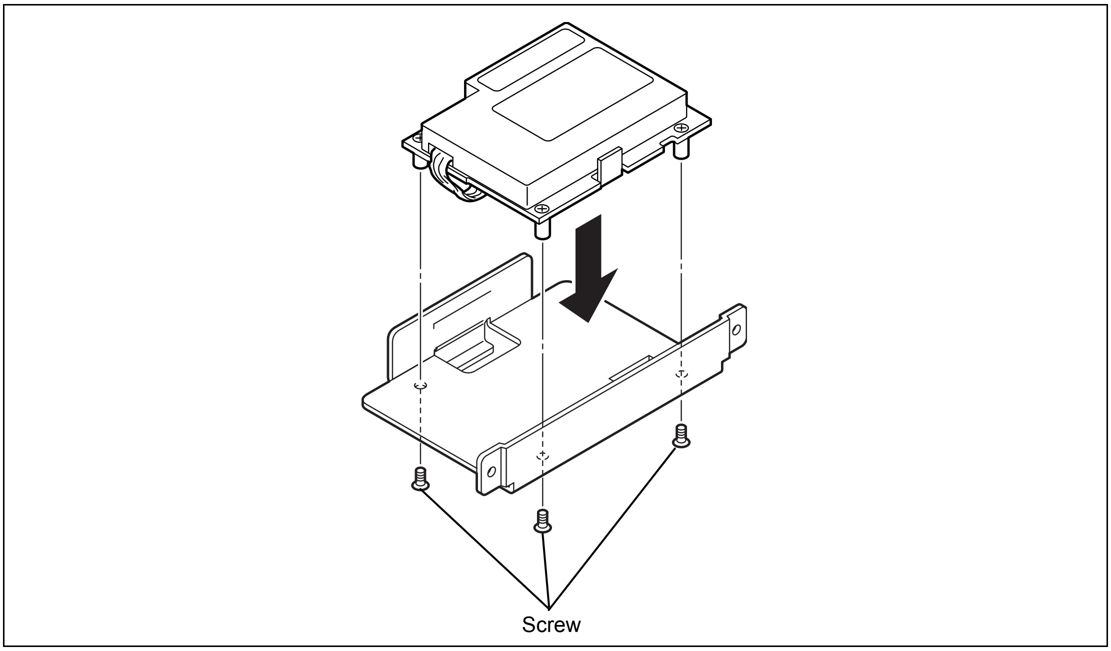


8. Secure the RAID controller to the server chassis.

9. Remove the two screws for the battery bracket attached to the server, and then remove the bracket.



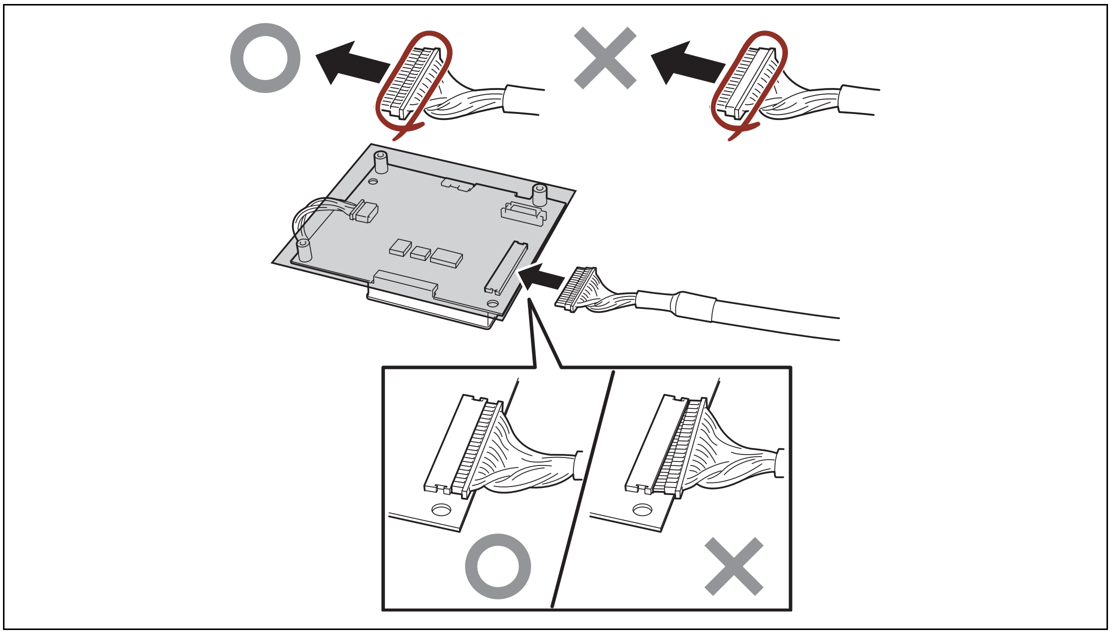
10. Use the screws that came with the additional battery to fix the battery to the bracket.



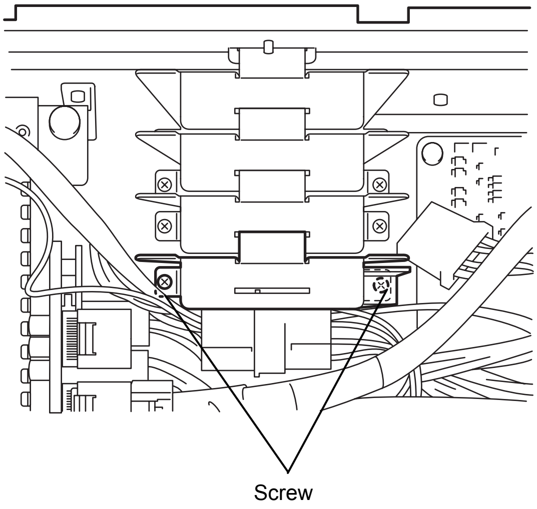
11. Connect the cable to the additional battery.

Be aware of the face of the connector according to the figure below.

Connect a cable to the connector with matching their markings.

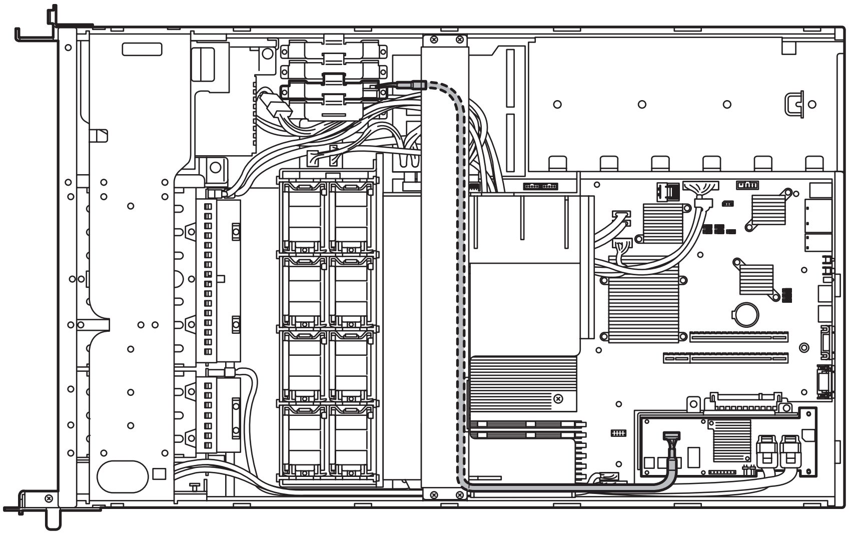


12. Use the screws that came with the additional battery to fix the battery to the bracket.

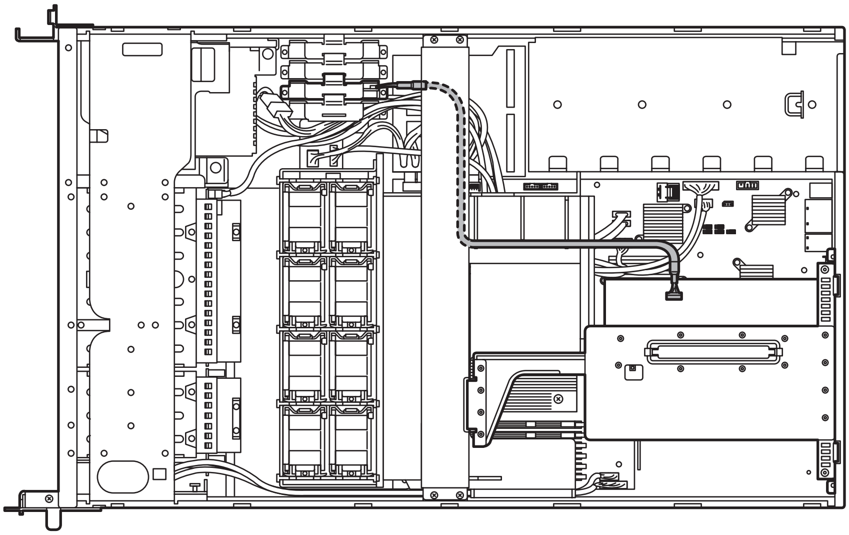


13. For a 2-5-inch model, route the cables as shown in the following figures.

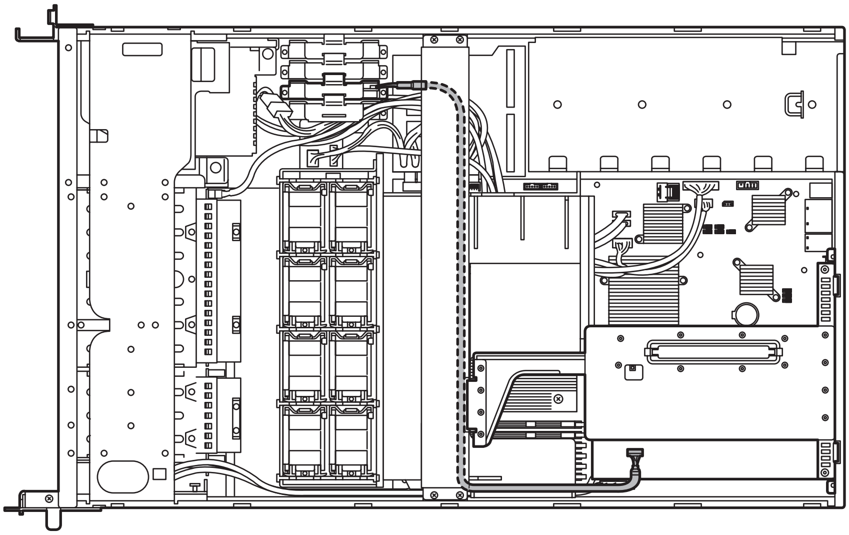
– ■ When connecting to a RAID controller inserted into the dedicated slot



- When connecting to a RAID controller inserted into a low-profile slot

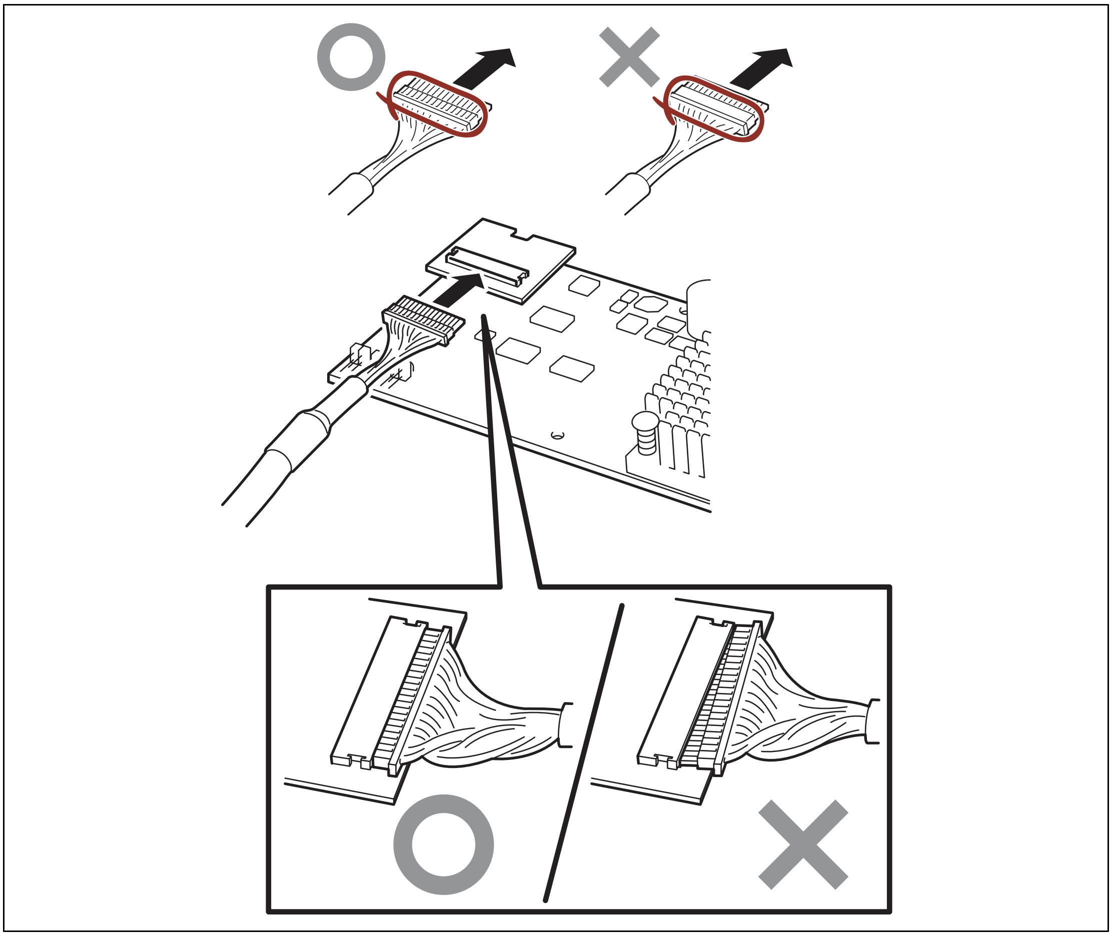


- When connecting to a RAID controller inserted into a full-height slot



14. Connect the cable to the connector board installed on the RAID controller.

Be aware of the face of the connector according to the figure below.



15. Install the components you removed previously.

Removing Additional Battery for RAID Controller

Remove the additional battery for RAID controller in reverse order of the installation steps.

USE OF INTERNAL HARD DISK DRIVES IN THE RAID SYSTEM

Using the RAID controller allows you to use hard disk drives in the device bays of the server and those in the optional expansion disk cabinet in the RAID System.

A RAID system can be built by using an optional RAID controller (N8103-129/130).

IMPORTANT:

- Making hard disk drives in the RAID System or changing the RAID level initializes hard disk drives. If the hard disk drive to be configured in the RAID System has your valuable data stored, make sure to make a backup copy of the data in another hard disk drive before installing the RAID controller and configuring the RAID System.
- More than one hard disk drive is required to configure a Logical Drive.
- Use hard disk drives of the same capacity and performance (e.g., revolution) for each pack to configure them in the RAID System.

NOTES:

- Make sure of RAID levels and hard disk drives available for the RAID controller to choose an appropriate controller.
- A Logical Drive except for RAID0 increases disk reliability. However, the actually available capacity becomes smaller than the total hard disk drive capacity in the Logical Drive.

Optional RAID Controller (N8103-129/130)

At the factory, the interface cable is connected to the SATA HDD connector on the motherboard. Refer to the manual coming with optional RAID controller (N8103-129/130) for details.

IMPORTANT: The RAID controller board is extremely sensitive to static electricity. Make sure to touch the metal frame of the Server to discharge static electricity from your body before handling the RAID controller. Do not touch the RAID controller terminals or on-board parts by a bare hand or place the RAID controller directly on the desk. For static notes, see page 9-3.

NOTE: Before installing an optional RAID controller, run the SETUP utility, select [Advanced] → [PCI Configuration], and confirm that [Enabled] is set for the parameter [PCI Slot xx ROM] (xx: PCI slot number).

IMPORTANT: When N8103-129/130 is inserted, do not switch to the hibernation or standby mode.

Installation

See *Installing RAID Controller* on page 9-59 for the installation of a RAID controller (N8103-129/130).

Removal

To remove the optional RAID controller (N8103-129/130), perform the above procedure in reverse.

Observe the following when configuring a RAID system:

- Use the minimum number of hard disk drives required to configure the desired RAID level. These hard disk drives must have either the same capacity or the same rotational speed. Note that the minimum number of hard disk drives required depends on the RAID configuration.
- Specify the same RAID level for the all logical drives: RAID0, RAID1, RAID5, RAID6, RAID10, or RAID50.

If you are installing the operating system to the internal hard disk drives, we recommend using the RAID controller recognized by Express Setup to execute all operations from configuring the RAID system to installing and setting up the operating system.

If you are not installing the operating system to the hard disk drives, select [Other] in the [Select OS] step in Express Setup. The installer will then automatically execute the processes from configuring the RAID system to installing the maintenance utilities.

If you are executing a manual setup, use the RAID configuration utility incorporated in the chip on the card. The utility can be activated during the POST that starts executing as soon as the power to the server is turned on. For a detailed description of the data transfer speed and the configuration of the RAID system and logical drives, see RAID SYSTEM CONFIGURATION (page 307) or the operating manual supplied with the optional RAID controller (N8103-129/130).

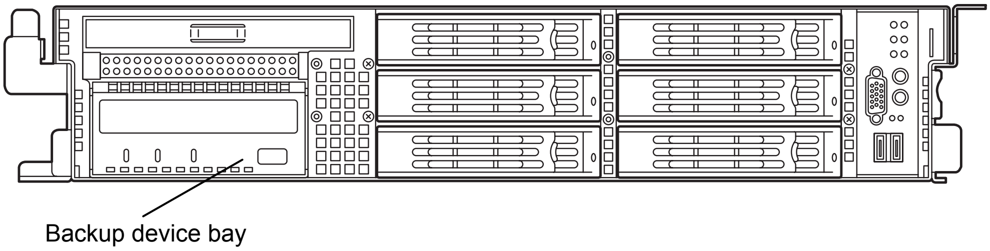
IMPORTANT: When using optional RAID controller N8103-129/130, do not let the system go to Hibernate or Standby mode.

BACKUP DEVICES

This server has one bay for installing a file backup device such as a magnetic tape drive.

IMPORTANT:

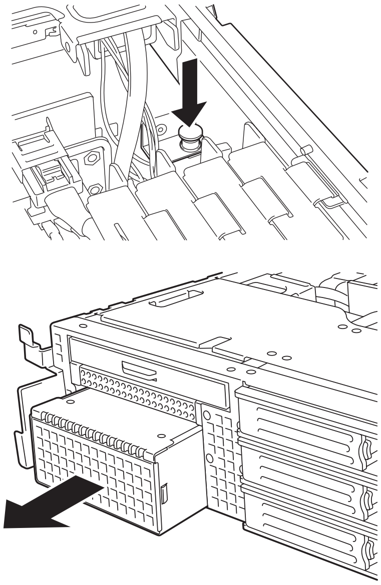
- To install a backup device that has an SCSI interface, a separately sold SCSI controller and SCSI cable (K410-146 (00)) are required. (For details, see Supported cards and slots into which they can be inserted on page 9-71.)
- Do not install a backup device that is not specified by NEC.
- Only devices that have dimensions up to a width of approximately 9 cm (3.5 inches) and a height of approximately 4 cm (1.6 inches) can be installed in this server.



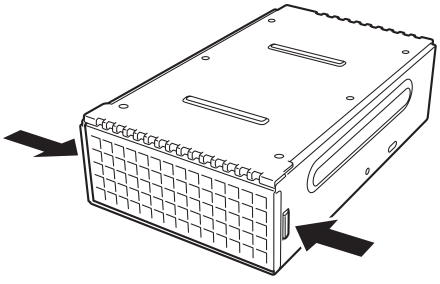
Installing a SCSI interface device

IMPORTANT: To use a device that has an SCSI interface, a separately sold optional PCI SCSI controller is required.

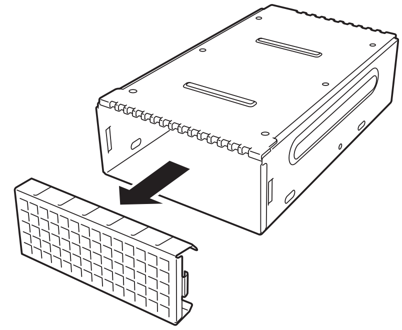
1. Prepare as described on page 9-4.
2. Pull the server out of the rack (as described on page 9-4).
3. Remove the drive cover and logic cover (as described on pages 9-25, 9-26).
4. Remove the PCI riser card (as described on page 9-51).
5. Remove the support bar and processor duct (as described on page 9-42).
6. Press the device carrier level to unlock the carrier, and then remove the carrier from the front of the unit.



7. Press the tabs on both sides of the front panel.

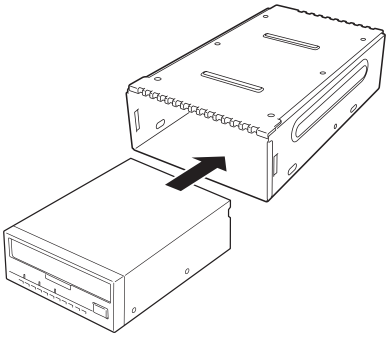


8. Remove the front panel.

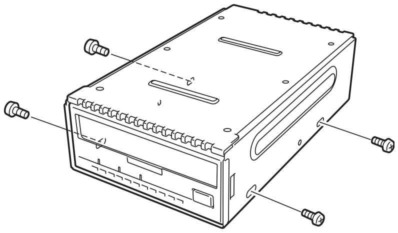


IMPORTANT: Keep the removed front panel in a safe place.

9. Insert a backup device into the device carrier.



10. Use the screws that came with the server to fix the backup device in place.

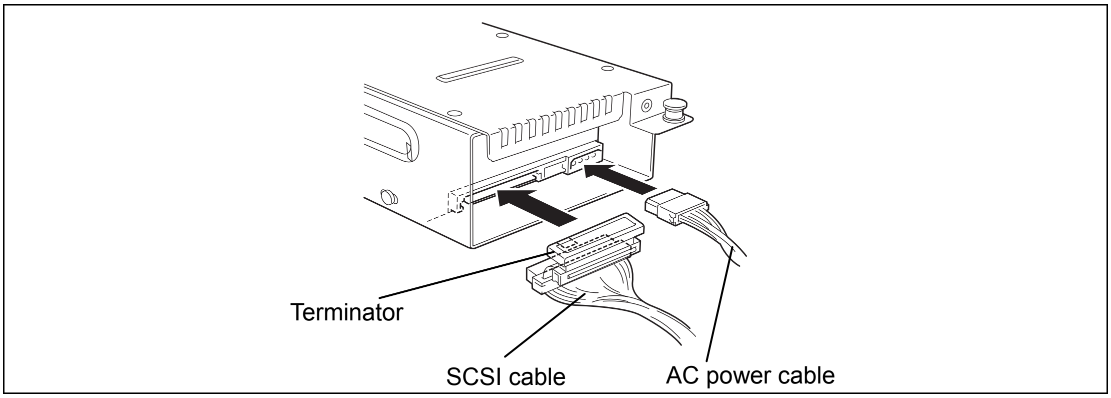


NOTE:

- Be sure to use the screws that came with the server.
- Adjust the attachment position of the device so that the screw holes line up.
- If the device is long enough to make connecting a cable difficult, slide the device forward for connection.

11. Connect the interface cable and power cable to the backup device.

Connect the power cable that came with the server and the separately sold SCSI cable (K410-147 (00)) to the backup device.



NOTE: A power cable is provided for the device bay.

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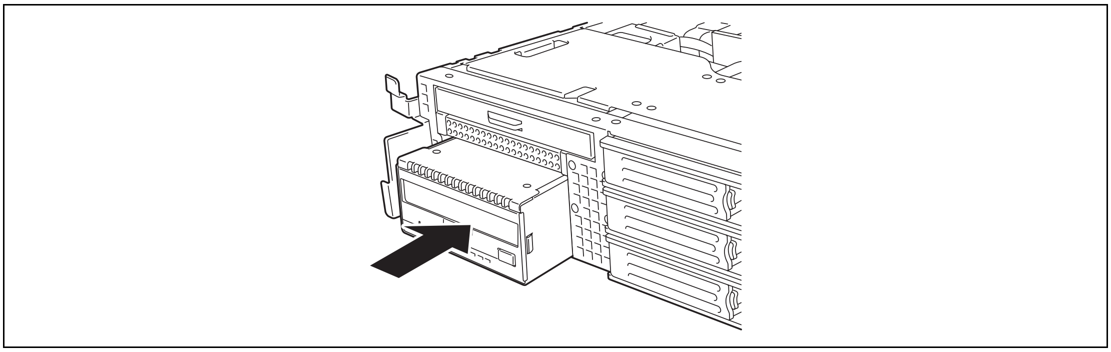
12. Insert the device carrier into the backup device bay.

The power cable is not yet connected. Only insert the carrier part way into the server, not all the way in.



13. Connect the power cable that is connected to the backup device to the backplane.

14. Insert the device carrier into the backup device bay.

Push the carrier in until you hear a click indicating that the carrier is locked into place.

NOTE: Be careful not to get the cables wedged into anything while pushing the carrier in.

---

15. Connect an optional SCSI controller to the PCI riser card.
For details, see *PCI cards* (on page 9-51).

16. Connect the SCSI cable to the SCSI controller connector.

17. Attach the PCI riser card.

18. Attach the removed components.

19. Start up the SCSI BIOS utility, and then set up the SCSI device.
For details, see the instruction manual that came with your backup device.

20. Install the device driver for the connected backup device.

For details, see the instruction manual that came with your backup device.

Installing a USB interface device

1. Prepare as described on page 9-4.

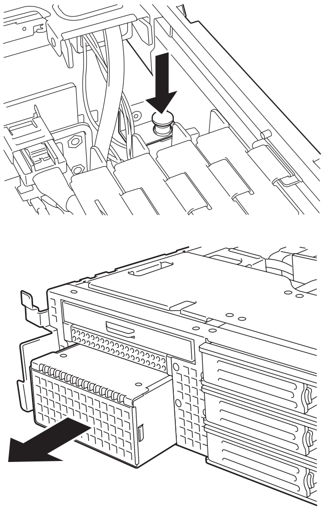
2. Pull the server out of the rack (as described on page 9-4).

3. Remove the drive cover and logic cover (as described on page 9-25, 9-26).

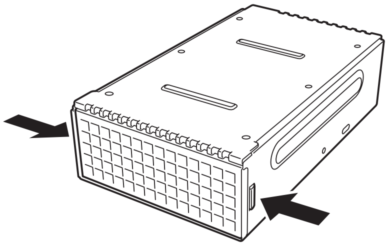
4. Remove the PCI riser card (as described on page 9-51).

5. Remove the support bar and processor duct (as described on page 9-42).

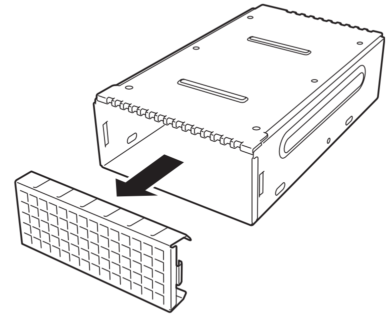
6. Press the device carrier level to unlock the carrier, and then remove the carrier from the front of the unit.



7. Press the tabs on both sides of the front panel.

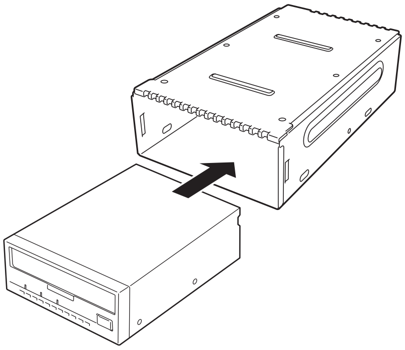


8. Remove the front panel.

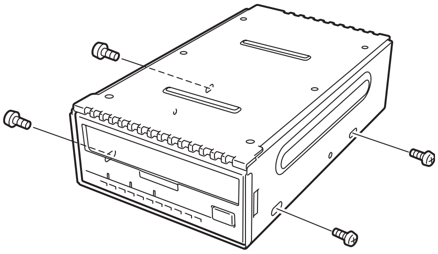


IMPORTANT: Keep the removed front panel in a safe place.

9. Insert a backup device into the device carrier.



10. Use the screws that came with the server to fix the backup device in place.

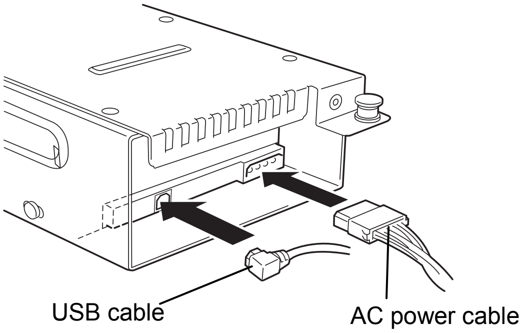


NOTE:

- Be sure to use the screws that came with the server.
- Adjust the attachment position of the device so that the screw holes line up.
- If the device is long enough to make connecting a cable difficult, slide the device forward for connection.

11. Connect the interface cable and power cable to the backup device.

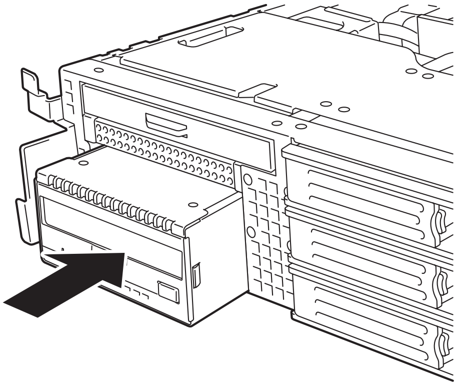
Connect the power cable that came with the server and the separately sold USB cable (K410-194/195 (00)) to the backup device.



NOTE: A power cable is provided for the device bay.

12. Insert the device carrier into the backup device bay.

The power cable is not yet connected. Only insert the carrier part way into the server, not all the way in.



13. Connect the power cable that is connected to the backup device to the backplane.

14. Insert the device carrier into the backup device bay.

Push the carrier in until you hear a click indicating that the carrier is locked into place.

NOTE: Be careful not to get the cables wedged into anything while pushing the carrier in.

15. Connect the USB cable to the motherboard.

NOTE: Make sure that the USB cable is not touching the electronic components on the motherboard.

16. Attach the removed components.

> **IMPORTANT:**
>
> If an N8151-81-internal MO (USB) or N8151-86-internal RDX (USB) is connected, the boot order might be changed.
>
> On the [Boot] menu of the BIOS setup utility, make the boot priority of the above removable devices lower than the boot disk.
>
> Procedure:
>
> [Boot] → [Boot Option #2] → [(Bus 08 Dev 0 0) PCI RAID Adapter]

17. Install the device driver for the connected backup device.

For details, see the instruction manual that came with your backup device.

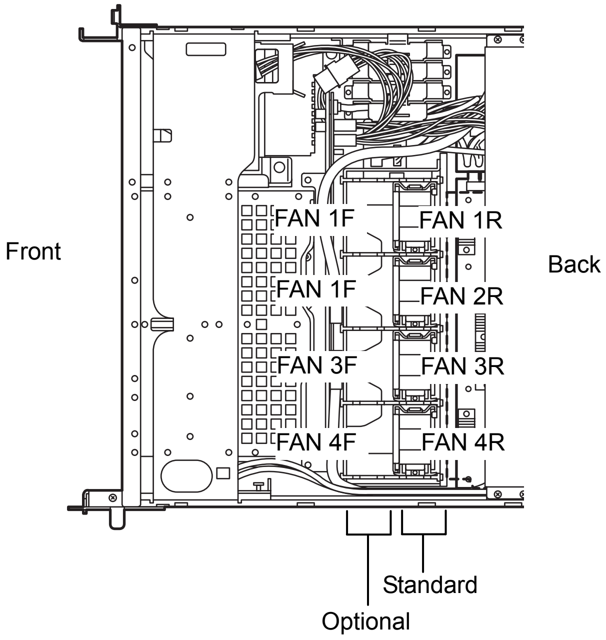
Removal

To remove a component, perform the steps for attaching it in reverse.

BACKUP FANS

By inserting optional fans into the expansion fan slots, you can ensure that the system is cooled even if the main fans fail.

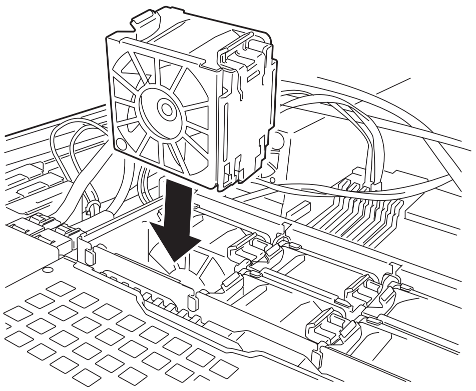
The following figure shows the standard fan slots, optional fan slots, and the slot numbers assigned to each slot.



Installation

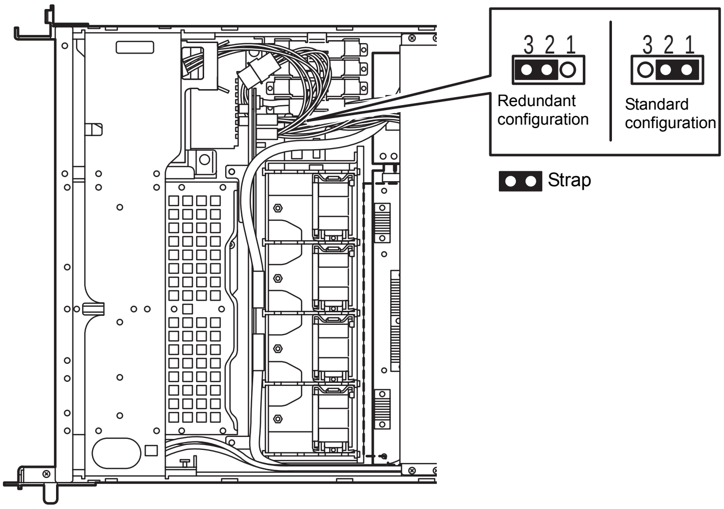
1. Prepare as described on page 9-4.
2. Pull the server out of the rack (as described on page 9-4).
3. Remove the drive cover (as described on page 9-25).
4. Determine the expansion slot in which to insert an additional fan.
5. Insert the fan straight into this slot.

   Push the fan in until you hear a click indicating that the fan is locked into place.



6. Change the position of the JFANSEL_1 jumper strap on the fan board.

IMPORTANT: Do not change any other jumper settings. Doing so might cause a server failure or incorrect operations.


3 2 1
Redundant configuration
3 2 1
Standard configuration
●● Strap

Removal

To remove a backup fan, prepare as described in steps 1 to 3 of *Installation*, and then perform the procedure below.

A fan can be replaced even while the power is on (hot swapping).

⚠ CAUTION

To safely use the server, observe the caution below. Failing to do so might result in an injury such as a burn or physical damage. For details, see pages 1-4 to 1-11.

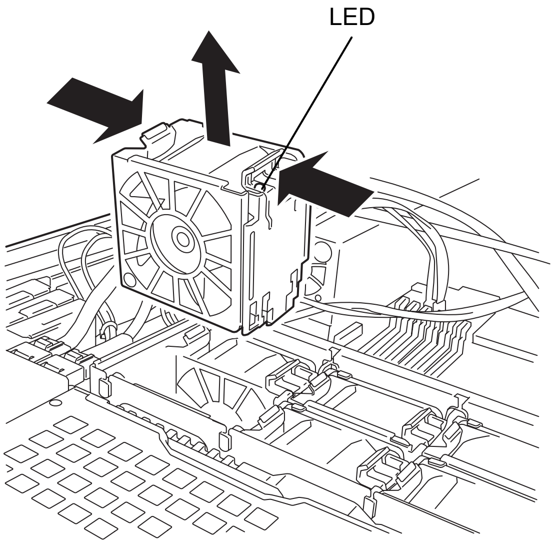
- Shock caution

1. Determine which fan to remove (replace).

You can use a management tool such as EXPRESSSCOPE Engine 2 to determine which fans have failed. In addition, if the LED for a fan is illuminated while the system is turned on, it indicates that the fan has failed.

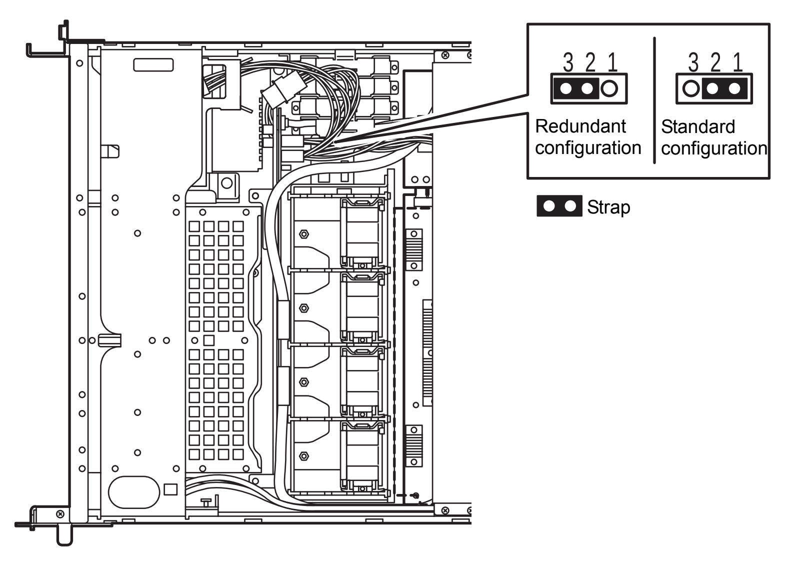
2. Grab the fan as shown in the figure on the right, and lift it straight up.

3. To replace a fan, install it as described in steps 5 and 6 of Installation.



4. Change the position of the JFANSEL_1 jumper strap on the fan board.

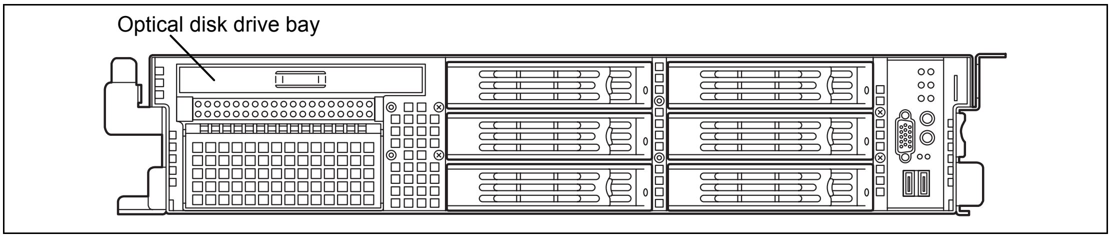
IMPORTANT: Do not change any other jumper settings. Doing so might cause a server failure or incorrect operations.


3 2 1
Redundant configuration
3 2 1
Standard configuration
Strap

OPTICAL DISK DRIVE

You may replace the factory-installed optical disk drive with an optional DVD SuperMULTI drive.

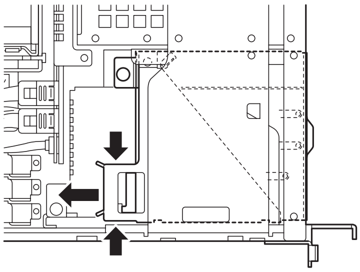
IMPORTANT: Be sure to use the optical disk drive authorized by NEC.



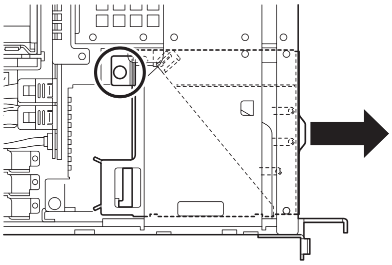
Installation Procedure

Take the following steps to install the optical disk drive.

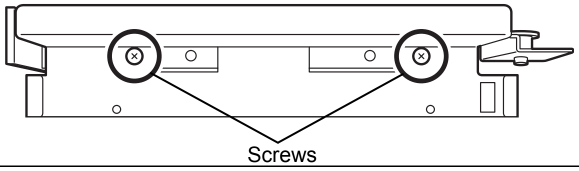
1. See page 9-4 to prepare.
2. Pull out the server from the rack (as described on page 9-4).
3. Remove the drive cover (as described on page 9-25).
4. Remove the cable while holding both ends of cable fixing bracket of the optical disk drive.



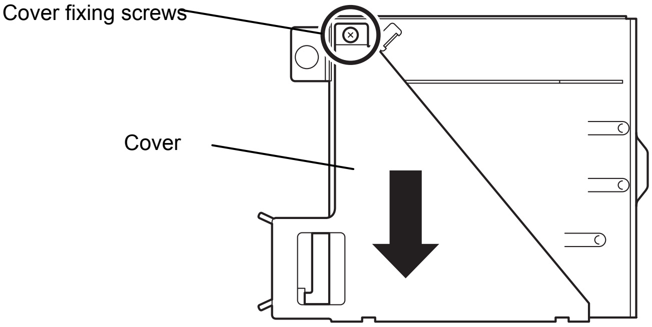
5. Remove the optical disk drive bracket by pulling the bracket in the direction of the arrow while pulling up the pull button that fixes the drive in place.



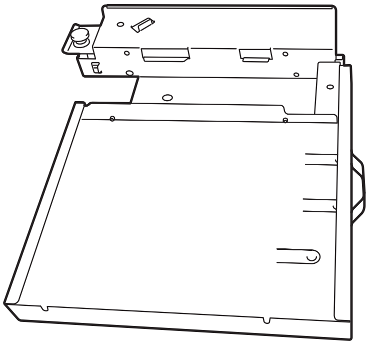
6. Remove the two screws that fix the dummy cover in place, and then remove the cover.



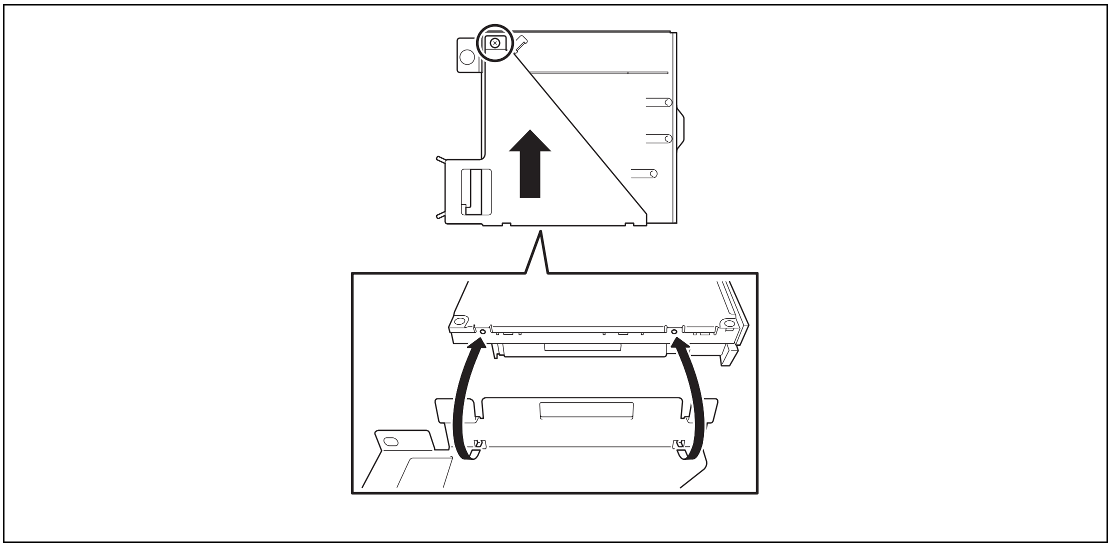
7. Remove the screw that fixes the optical disk drive bracket cover in place, and then slide the cover in the direction of the arrow to remove it.



8. Attach the optional internal optical disk drive to the bracket, and then fix the drive in place by using the screw that was used to fix the dummy cover in place.



9. Align the bracket cover hooks with the screw holes of the optical disk drive, and then use screws to fix the cover in place.



10. Install the drive into the server by performing steps 4 and 5 in reverse.
11. Install the components you removed previously.

Appendix A

Specifications

2.5-inch HDD model

Item			Express5800/R120b-2					
			Diskless model					
			N8100-1644F	N8100-1645F	N8100-1646F	N8100-1647F	N8100-1648F	N8100-1649F
CPU	Type		Intel® Xeon® Processor E5506	Intel® Xeon® Processor E5620	Intel® Xeon® Processor E5640	Intel® Xeon® Processor L5640	Intel® Xeon® Processor X5670	Intel® Xeon® Processor X5680
	Clock		2.13GHz	2.40GHz	2.66GHz	2.26GHz	2.93GHz	3.33GHz
	Standard		1					
	Maximum		2					
	3rd cache		4MB	12MB				
	Number of cores/Number of threads		2/2	4/8		6/12		
Chipset			Intel® 5520					
Memory	Standard		–					
	Maximum		Registered DIMM: 192GB (16GB x 12)[*1]					
	Memory module		DDR3L-1333 Registered DIMM					
	Maximum clock		800MHz	1066MHz			1333MHz	
	Error check, correction		ECC, x4/LockStep mode (x8) SDDC					
	Online spare memory		–	Supported				
	Memory mirroring/ memory RAID[*2]		Supported					
Auxiliary storage	Drive bay	Standard	–					
		Maximum[*3]	HDD: SATA 6TB (500GB x 12), SAS 7.2TB (600GB x 12) SSD: SATA 600GB (50GB x 12) (with optional bay installed)					
		Hot-plug	Supported					
	Interface level/ RAID system		SATA 3Gb/s: RAID 0/1/10 (standard[*3]), RAID 5/6/50 (option) SAS 6Gb/s: RAID 0/1/5/6/10/50 (option)					
	Optical disk drive		Built in/external drive (option)[*4, 5]					
	FDD		External drive (option)[*5]					
	Device bay		1 x 3.5-inch model tape device bay					
Additional slots	Supported slot		1 x PCI Express 2.0 (x 8 lanes, x 16 sockets) (Full-height, 312mm) 1 x PCI Express 2.0 (x 8 lanes, x 8 sockets) (Full-height, 312mm) 1 x PCI Express 2.0 (x 8 lanes, x 8 sockets) (Low-profile, 167.6mm) 2 x PCI Express 2.0 (x 4 lanes, x 8 sockets) (Low-profile, 167.6mm)					
Graphics	Graphics accelerator/ Video RAM		Management controller embedded on motherboard/ 32MB					
	Graphic display/ resolution		640 x 480, 800 x 600, 1,024 x 768, 1,280 x 1,024: 16,770,000 colors max.					

Item		**Express5800/R120b-2**					
		Diskless model					
		N8100-1644F	**N8100-1645F**	**N8100-1646F**	**N8100-1647F**	**N8100-1648F**	**N8100-1649F**
Interface	Keyboard/mouse	1 port (PS/2, 1 for rear panel)/1 port (PS/2, 1 for rear panel)					
	Analog RGB	2 ports (MINI D-Sub 15-pin, 1 for front panel, 1 for rear panel)					
	Serial	1 port (RS-232C compliant/D-Sub 9-pin, serial port B, 1 for rear panel, optional port can be used (up to two ports in total))					
	USB 2.0	8 ports (2 for front panel, 2 for rear panel, 4 for internal)					
	1000BASE-T LAN connector	2 ports (100Base-TX/10Base-T supported, RJ-45, 2 for rear panel)					
	LAN connector for management	1 port (100Base-TX/10Base-T supported, RJ-45, 1 for rear panel)					
Backup power supply		Supported (option, hot-plug available)					
Backup fan		Supported (option, hot-plug available)					
External dimensions (mm)	Excluding front bezel, inner rail, and protruding parts	445.2 (width) x 721.2 (depth) x 86.7 (height)					
	Including front bezel, inner rail, and protruding parts	486.5 (width) x 821.9 (depth) x 88.6 (height)					
Weight (Max.)		21kg (31kg) (including rail)					
Power supply		750W 80 PLUS® Gold compliant (hot-plug available) 100 to 120VAC ± 10%, 200 to 240VAC ± 10%, 50/60Hz ± 3Hz					
Environmental requirements	Temperature	10 to 35ºC (operating), -10 to 55ºC (non-operating, storage)					
	Humidity	20 to 80% RH (no condensation)[*6]					

*1 In a 2-CPU configuration. Max. 96GB (16GB x 6) in a 1-CPU configuration.

*2 When using the memory RAS feature, you need to install a dedicated RAS memory board (N8102-387/388/389/390/391). Note that the memory boards N8102-371/372/373/374/375 cannot be used.

*3 The hard disk drive capacity is indicated based on the conversion value of 1GB = 1000^3 bytes. If you are calculating the hard disk drive capacity based on a conversion value of 1GB = 1024^3 bytes, the actual usable hard disk drive capacity will be insufficient.

*4 Writing software is not supplied with the server.

*5 For maintenance purposes or for re-installing operating system, prepare at least one external DVD-ROM and one external FDD or Flash FDD per system.

*6 If the server is stored in an environment where the temperature is either too low or too high, the system clock might become inaccurate.
If you require an accurate system clock, we recommend using a time server (NTP server).

3.5-inch HDD model

Item			Express5800/R120b-2			
			Diskless model			
			N8100-1650F	N8100-1651F	N8100-1652F	N8100-1653F
CPU	Type		Intel® Xeon® Processor E5503	Intel® Xeon® Processor E5506	Intel® Xeon® Processor E5620	Intel® Xeon® Processor X5640
	Clock		2GHz	2.13GHz	2.40GHz	2.66GHz
	Standard		1			
	Maximum		2			
	3rd cache		4MB		12MB	
	Number of cores/Number of threads		2/2	4/4	4/8	
Chipset			Intel® 5520			
Memory	Standard		–			
	Maximum		192GB (16GB x 12)[*1]			
	Memory module		DDR3L-1333 Registered DIMM			
	Maximum clock		800MHz		1066MHz	
	Error check, correction		ECC, x4/LockStep mode (x8) SDDC			
	Online spare memory		–		Supported	
	Memory mirroring/ memory RAID[*2]		Supported			
Auxiliary storage	Drive bay	Standard	–			
		Maximum[*3]	HDD: SATA 12TB (12TB x 6)			
		Hot-plug	Supported			
	Interface level/ RAID system		SATA 3Gb/s: RAID 0/1/10 (standard[*3]), RAID 5/6/50 (option)			
	Optical disk drive		Built in/external drive (option)[*4, 5]			
	FDD		External drive (option)[*5]			
	Device bay		1 x 3.5-inch model tape device bay			
Additional slots	Supported slot		1 x PCI Express 2.0 (x 8 lanes, x 16 sockets) (Full-height, 312mm) 1 x PCI Express 2.0 (x 8 lanes, x 8 sockets) (Full-height, 312mm) 1 x PCI Express 2.0 (x 8 lanes, x 8 sockets) (Low-profile, 167.6mm) 2 x PCI Express 2.0 (x 4 lanes, x 8 sockets) (Low-profile, 167.6mm) (A PCI-X slot can be installed by using the optional riser card.)			
Graphics	Graphics accelerator/ Video RAM		Management controller embedded on motherboard/ 32MB			
	Graphic display/ resolution		640 x 480, 800 x 600, 1,024 x 768, 1,280 x 1,024: 16,770,000 colors max.			
Interface	Keyboard/mouse		1 port (PS/2, 1 for rear panel)/1 port (PS/2, 1 for rear panel)			
	Analog RGB		2 ports (MINI D-Sub 15-pin, 1 for front panel, 1 for rear panel)			
	Serial		1 port (RS-232C compliant/D-Sub 9-pin, serial port B, 1 for rear panel, optional port can be used (up to two ports in total))			
	USB 2.0		8 ports (2 for front panel, 2 for rear panel, 4 for internal)			
	1000BASE-T LAN connector		2 ports (100Base-TX/10Base-T supported, RJ-45, 2 for rear panel)			
	LAN connector for management		1 port (100Base-TX/10Base-T supported, RJ-45, 1 for rear panel)			
Backup power supply			Supported (option, hot-plug available)			
Backup fan			Supported (option, hot-plug available)			

Item		**Express5800/R120b-2**			
		Diskless model			
		N8100-1650F	**N8100-1651F**	**N8100-1652F**	**N8100-1653F**
External dimensions (mm)	Excluding front bezel, inner rail, and protruding parts	445.2 (width) x 721.2 (depth) x 86.7 (height)			
	Including front bezel, inner rail, and protruding parts	486.5 (width) x 821.9 (depth) x 88.6 (height)			
Weight (Max.)		21kg (31kg)			
Power supply		750W 80 PLUS® Gold compliant (hot-plug available) 100 to 120VAC ± 10%, 200 to 240VAC ± 10%, 50/60Hz ± 3Hz			
Environmental requirements	Temperature	10 to 35ºC (operating), -10 to 55ºC (non-operating, storage)			
	Humidity	20 to 80% RH (no condensation)*6			

*1 In a 2-CPU configuration. Max. 96GB (16GB x 6) in a 1-CPU configuration.

*2 When using the memory RAS feature, you need to install a dedicated RAS memory board (N8102-387/388/389/390/391). Note that the memory boards N8102-371/372/373/374/375 cannot be used.

*3 The hard disk drive capacity is indicated based on the conversion value of 1GB = 1000^3 bytes. If you are calculating the hard disk drive capacity based on a conversion value of 1GB = 1024^3 bytes, the actual usable hard disk drive capacity will be insufficient.

*4 Writing software is not supplied with the server.

*5 For maintenance purposes or for re-installing operating system, prepare at least one external DVD-ROM and one external FDD or Flash FDD per system.

*6 If the server is stored in an environment where the temperature is either too low or too high, the system clock might become inaccurate.
If you require an accurate system clock, we recommend using a time server (NTP server).

Appendix B

Other Precautions

Transfer Rate of the On-board LAN Controller

The onboard network interface controller supports 10Base-T and 100Base-TX networks and a capable of full or half duplex.

The controller can automatically detect and switch for network speed and transfer mode connected to the HUB. However, for proper network operation, specify the link speed and duplex mode to the same value as the value specified for HUB.

Server Management Software

The NEC EXPRESSBUILDER DVD-ROM that comes with the server contains the NEC ESMPRO utility.

NEC recommends that you should install the NEC ESMPRO for effective use of the reliability enhancement features of the server.

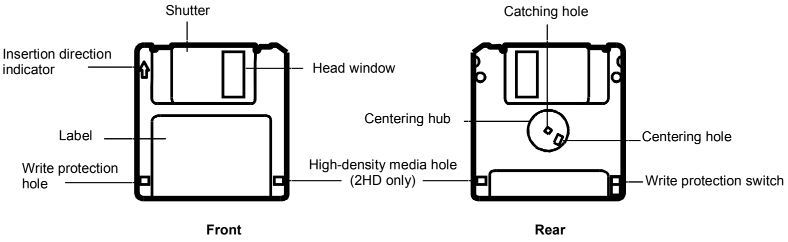
Floppy Disk

The following describes use of the floppy disk.

Floppy disk type

The server uses 3.5-inch floppy disks. You can use the following two types of 3.5-inch floppy disks:

- 2HD floppy disk (double-sided high-density track type)
  Stores data of 1.44MB.
- 2DD floppy disk (double-sided double-density track type)
  Stores data of 720KB.

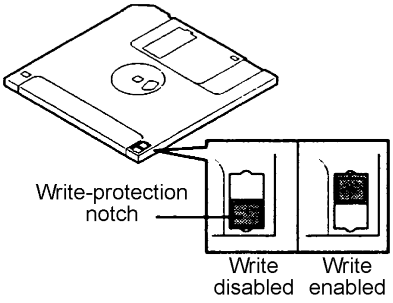

Shutter
Insertion direction indicator
Head window
Label
Write protection hole
Front
Catching hole
Centering hub
Centering hole
High-density media hole (2HD only)
Write protection switch
Rear

Notes on use

The floppy disk is an important data storage media with delicate structure and requires care. Keep the following notes in mind to use it:

- Insert the floppy disk into the floppy disk drive gently as far as it goes.
- Attach the label to the correct position.
- Do not write anything directly onto the disk surface with a pencil or ball-point pen.
- Do not open the shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- Do not leave the floppy disk with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the floppy disk near any form of liquid or a chemical or in a place where a chemical may be accidentally sprayed over them.
- Do not place any magnetic objects (e.g., magnet) near the floppy disk.
- Do not clip the floppy disk or drop it.
- Keep the floppy disk in a floppy disk case that protects it from magnetism and dust.
- Write-protection

  A floppy disk has a write-protect switch that prevents the stored data from accidental erasure.



You can read data from a write-protected floppy disk, but you cannot save data into the floppy disk or format it. NEC recommends that you should write-protect any floppy disk containing valuable data unless you are about to save data.

To write-protect a 3.5-inch floppy disk, use the write-protect switch provided on its back.

- Disk format

To write data into a floppy disk, the floppy disk must be "formatted." "Formatting" is to initialize the floppy disk and make it available for the system environment (operating system).

IMPORTANT:

- Formatting a used floppy disk clears all the data contained in it, if any.
- Formatting a floppy disk from the DOS command line is not available with the server. Use a formatted floppy disk to work with it on the DOS command line.

The format method depends on your operating system. Refer to the manual that comes with your operating system for details.

- Data backup

"Data backup" is to copy data stored in a media into another media (e.g., floppy disk, digital audio tape, or magnet-optical disk).

IMPORTANT: Make sure to make a back-up copy of every floppy disk, if provided.

The floppy disk is a very delicate storage media. Dust or thermal changes, as well as operator's misconduct or sever failures, may cause loss of data. To avoid loss of data, NEC recommends that you should make a back-up copy of your valuable data on a regular basis.

DVD/CD-ROM

Keep the following notes in mind to use the DVD/CD-ROM for the server:

- Press the center of the storage case to remove the DVD/CD-ROM from the case.
- Do not drop the DVD/CD-ROM.
- Do not place anything on the DVD/CD-ROM or bend the DVD/CD-ROM.
- Do not attach any label onto the DVD/CD-ROM.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the DVD/CD-ROM with its printed side upward and gently put it on the tray.
- Do not scratch the DVD/CD-ROM or write anything directly on it with a pencil or ball-point pen.
- Do not leave the DVD/CD-ROM with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the DVD/CD-ROM in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the DVD/CD-ROM, wipe the DVD/CD-ROM from its center to edge with a dry soft cloth slowly and gently.
- Use the dedicated cleaner to clean the DVD/CD-ROM. Do not use record spray/cleaner, benzene, or thinner.
- Keep the DVD/CD-ROM in the dedicated case when not in use.

Tape Media

The following describes data handling with the DAT, DLT, or AIT optionally available for the server.

- Saving your valuable data

  When you save your valuable data or programs into the cartridge tape, you should save them into two cartridge tapes to make the primary and secondary tapes.

  This enables you to restore your data from one tape when the other makes a read error, as well as to protect your valuable data and programs from loss.

- Three-generation data management

  NEC recommends that you should employ three-generation data management for data storage.

  Three-generation data management uses three cartridge tapes: A, B, and C. You save data to tape A on the first day, tape B on the second day, tape C on the third day, tape A on the forth day, and so on. That is, you save data into cartridge tapes cyclically from tape A through C.

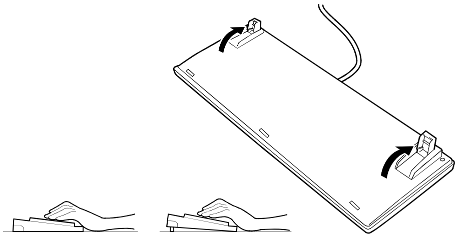
This enables you, for example, to use tape B to restore the data when tape C makes a read error. Also when both tapes B and C make a read error, you can restore your valuable data by using the data stored in tape A.

Keyboard

The keyboard is a device to instruct you computer by entering alphanumeric characters or symbols.

IMPORTANT:

- Do not pour any liquid such as water or put anything into the keyboard. Doing so may cause a failure of the keyboard.
- The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



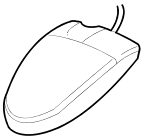
NOTE: The keyboard functions depend on the software. Refer to the manual that comes with the software for details.

Mouse

Like the keyboard, the mouse is a device to instruct your computer. Many OS's and application software require the mouse for operation.

NOTE:

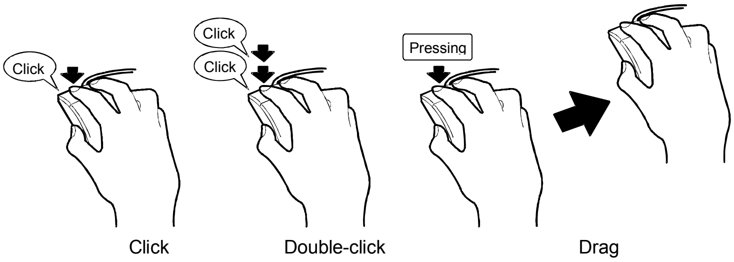
- Functions assigned to the mouse buttons vary depending on the software. For details, refer to the manual provided with the software.
- Use the mouse on a clean desk. Using the mouse on a dusty or dirty desk disturbs smooth movement or normal operation of the mouse. When your mouse movement seems dull, clean your mouse. (See Chapter 7.)



Mouse operation includes "Click," "Double-click," and "Drag."

Click:	Press the button only once and release it.
Double-click:	Press the button twice consecutively and release it.
Drag:	Press and hold the button and move the mouse.

Operation of the server involves combinations of these mouse operations and data entries with the keyboard.



Appendix C

IRQ

The factory-set interrupt requests are listed below. Find an appropriate one to install an optional device.

Interrupt Request

The factory-set IRQs are assigned as follows:

IRQ	Peripheral Device (Controller)	IRQ	Peripheral Device (Controller)
0	System timer	12	SM Bus
1	–	13	Numeric data processor
2	–	14	–
3	COM 2 serial port	15	–
4	COM 1 serial port	16	VGA, LAN1
5	PCI	17	LAN2, SATA
6	–	18	–
7	PCI	19	–
8	Real-time clock	20	USB
9	ACPI Compliant System	21	USB
10	PCI	22	USB
11	Motherboard resource	23	USB

(This page is intentionally left blank.)

Appendix D

Installing Windows Server 2008 R2

This section explains how to install the Windows Server 2008 R2.

NOTICE

Read the following notes or information before installing the Windows Server 2008 R2.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD-ROM attached to your server supports the following optional boards:

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID controller (256MB, RAID 0/1)*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8190-127 Fibre Channel Controller*
  - N8190-131 Fibre Channel Controller (2ch)*
  - N8190-153 Fibre Channel Controller (1ch)*
  - N8190-154 Fibre Channel Controller (2ch)*

* Option

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD-ROM attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008 R2
    - OS installation media (No Service Pack)

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using [Disk Management], invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using [Disk Management] in [Computer Management].

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional Flash FDD or USB FDD if necessary.

About the System Partition Size

The system partition size can be calculated from the following formula.

When the system is Windows Server 2008 R2:

Required partition size =
size required to install OS + paging file size + dump file size + application size

Size required to install OS = 8,000MB (Full Installation)
or
= 3,500MB (Server Core Installation)
Paging file size (recommended) = Installed memory size * 1.5
Dump file size = Installed memory size + 300MB
Application size = Required size

IMPORTANT:

- The above-mentioned partition size is the minimum partition size required for system installation. Ensure sufficient partition size for system operation.

  Following numbers are the recommended size.

  - Full Installation: 32,768MB (32GB) or more
  - Server Core Installation: 10,240MB (10GB) or more

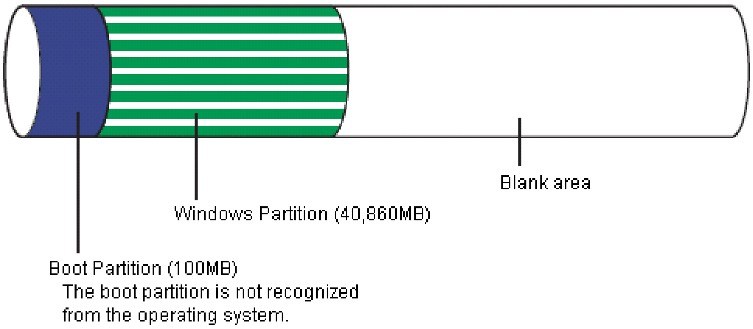
    *1GB = 1,024MB

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the Windows Partition is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

NOTE: When new partition is created, initial 100MB is assigned as boot partition by Windows OS.

Example:

If you make a partition of 40,960MB (40GB), usable space will be 40,960MB – 100MB = 40,860MB.


Blank area
Windows Partition (40,860MB)
Boot Partition (100MB)
The boot partition is not recognized from the operating system.

The partition size required for a system with an installed memory size of 1GB(1,024MB) and a full installation of the operating system:

8,000MB + (1,024MB * 1.5) + (1,024MB + 300MB) + application size
= 10,860MB + application size.

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

BitLocker

If you use BitLocker, note the following:

- Be sure to keep the recovery password secure. Do not keep it around a server running BitLocker.

  IMPORTANT: Without the recovery password, you cannot start the operating system and see the partition content encrypted by BitLocker. The recovery password may be needed when you start the operating system after performing the following tasks:
  – Replacing the motherboard
  – Initializing the TPM
  – Changing the BIOS setting

- Windows Server 2008 R2 is not installed in the partition encrypted by BitLocker.
- For BitLocker, hotfix is provided by Microsoft. Before applying hotfix, check the information written by Microsoft carefully. For more information, visit http://support.microsoft.com/kb/975496/en-us.

INSTALLING Windows Server 2008 R2

Preparations for Installation

- NEC EXPRESSBUILDER DVD-ROM
- Microsoft Windows Server 2008 R2 Standard (DVD-ROM) / Microsoft Windows Server 2008 R2 Enterprise (DVD-ROM)
- User's Guide
- Getting Started

Windows Server 2008 R2 Clean Installation

This section explains how to perform a clean installation of Windows Server 2008 R2.

Follow steps below appropriate to your environment.

1. Turn on your system.

   IMPORTANT: To install Windows Server 2008 R2, you may need to update BIOS.

   To check if your system needs a BIOS update, go to:

   http://www.nec.com/express/

2. Insert the Windows Server 2008 R2 DVD-ROM into your DVD-ROM drive.
3. Restart the system.

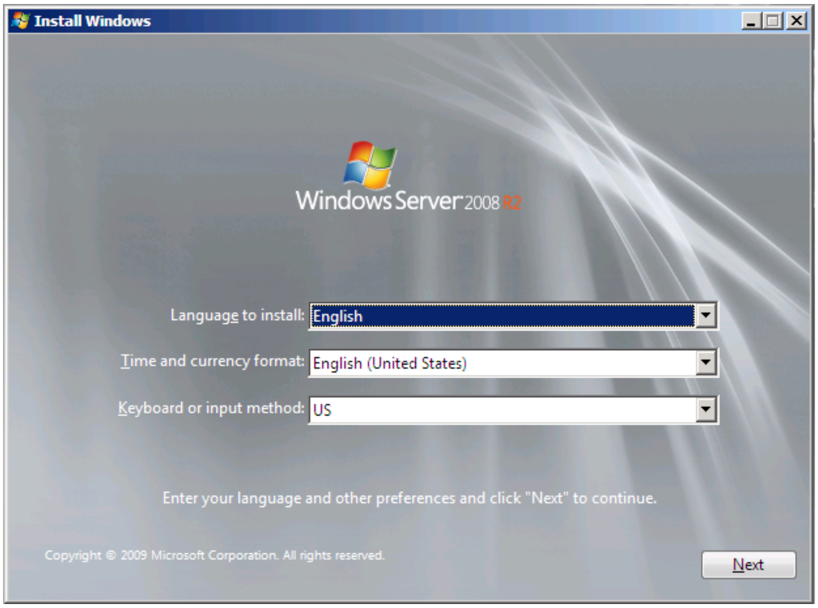
   To restart the system, press **Ctrl** + **Alt** + **Del** or turn off the system once, and then turn it on again.

   IMPORTANT: When prompted to [press any key to boot from CD or DVD], press **Enter** while the message is displayed.

   If the Windows installation screen (shown in step 4) does not appear, turn off the system, and then turn it on again.

   The DVD-ROM starts. A message "Windows is loading files …" appears.

4. Select a language and other options from the drop-down lists, and then click [Next].


Install Windows
Windows Server 2008 R2
Next

Language to install: English

Time and currency format: English (United States)

Keyboard or input method: US

Enter your language and other preferences and click "Next" to continue.

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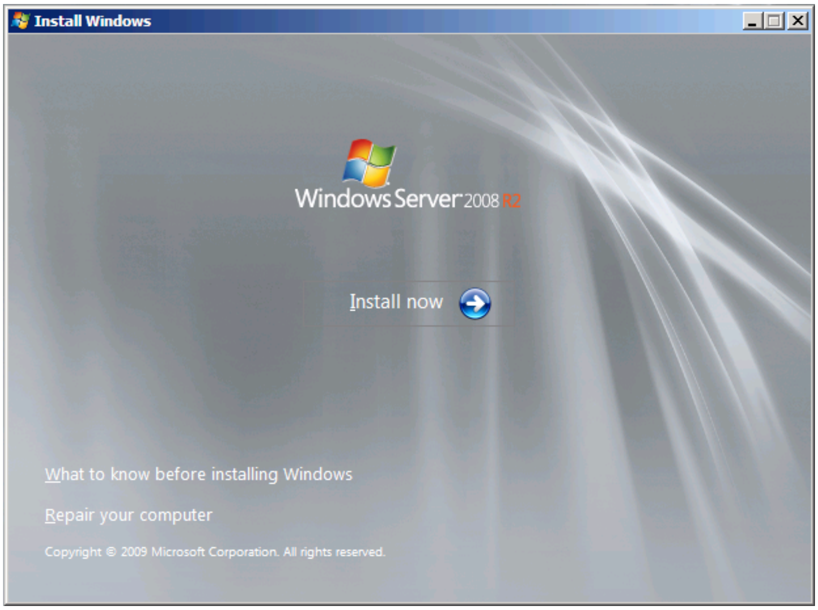
5. Click the [Install now] button.

The installation starts.


Install Windows
Windows Server 2008 R2
Install now
What to know before installing Windows
Repair your computer

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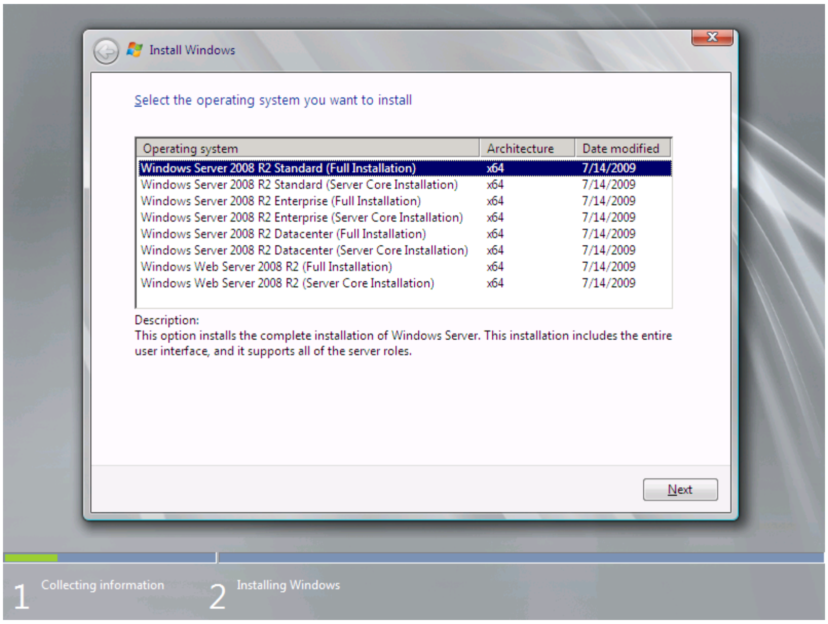
6. Select the edition of the Windows operating system that you purchased.



Select the operating system you want to install

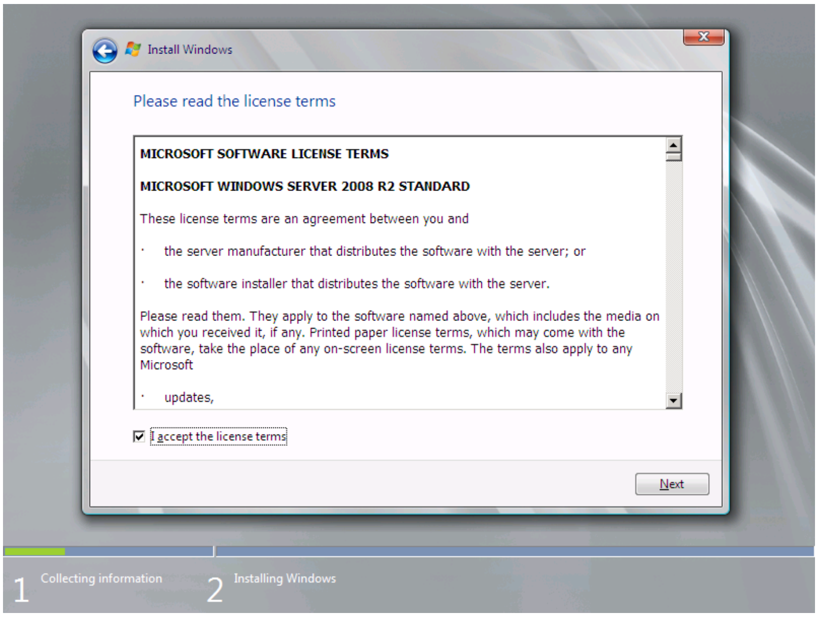
Operating system	Architecture	Date modified
Windows Server 2008 R2 Standard (Full Installation)	x64	7/14/2009
Windows Server 2008 R2 Standard (Server Core Installation)	x64	7/14/2009
Windows Server 2008 R2 Enterprise (Full Installation)	x64	7/14/2009
Windows Server 2008 R2 Enterprise (Server Core Installation)	x64	7/14/2009
Windows Server 2008 R2 Datacenter (Full Installation)	x64	7/14/2009
Windows Server 2008 R2 Datacenter (Server Core Installation)	x64	7/14/2009
Windows Web Server 2008 R2 (Full Installation)	x64	7/14/2009
Windows Web Server 2008 R2 (Server Core Installation)	x64	7/14/2009

Description:
This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.

NOTE: The Windows versions listed on the screen vary depending on the Windows Server 2008 R2 DVD-ROM you are using.

---

7. Read the license terms carefully. If you agree, select [I accept the license terms], and then click [Next].



Please read the license terms

MICROSOFT SOFTWARE LICENSE TERMS

MICROSOFT WINDOWS SERVER 2008 R2 STANDARD

These license terms are an agreement between you and

- the server manufacturer that distributes the software with the server; or
- the software installer that distributes the software with the server.

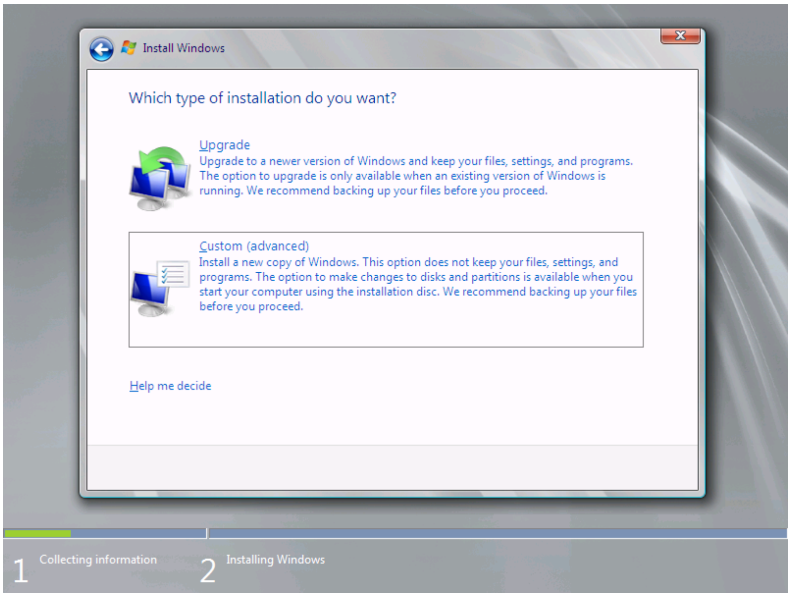
Please read them. They apply to the software named above, which includes the media on which you received it, if any. Printed paper license terms, which may come with the software, take the place of any on-screen license terms. The terms also apply to any Microsoft

- updates,

☑ I accept the license terms

8. Select the type of installation you want.

[Custom (advanced)] is selected below.



Which type of installation do you want?

Upgrade

Upgrade to a newer version of Windows and keep your files, settings, and programs. The option to upgrade is only available when an existing version of Windows is running. We recommend backing up your files before you proceed.

Custom (advanced)

Install a new copy of Windows. This option does not keep your files, settings, and programs. The option to make changes to disks and partitions is available when you start your computer using the installation disc. We recommend backing up your files before you proceed.

9. The screen of "Where do you want to install Windows?" is displayed.

NOTE: Please go to step 12 when you do not use the RAID Controller.

Remove the Backup DVD-ROM or Windows Server 2008 R2 DVD-ROM and set NEC EXPRESSBUILDER DVD, and select [Load Driver].

> Load Driver
>
> To install the device driver needed to access your hard drive, insert the installation media containing the driver files, and then click OK.
>
> NOTE: The installation media can be a floppy disk, CD, DVD, or USB flash drive.
>
> [Browse] [OK] [Cancel]

Click [Browse], and go to Step 10.

10. The folder reference dialog box appears.

Select a path in the NEC EXPRESSBUILDER DVD, and then click [OK].

– If the N8103-129/130 RAID Controller is used:
<drive letter>:\017\win\winnt\oemfd\ws2008r2\fd1\megasas2

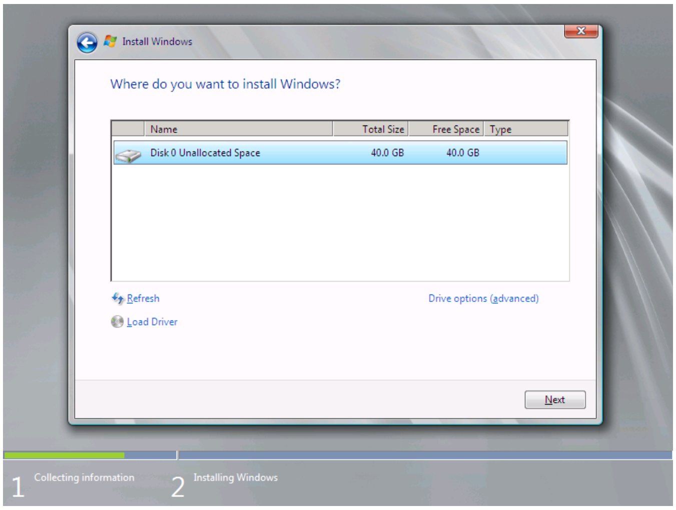
After you select the path, a list of drivers is displayed.

Select the following driver, and then click [OK]. Go to Step 11.

– If the N8103-129/130 RAID Controller is used:
[LSI MegaRAID SAS 9264-8i]

11. Remove the NEC EXPRESSBUILDER DVD and set Backup DVD-ROM or Windows Server 2008 R2 DVD-ROM.

12. Select the disk where a partition will be created, and then click [Drive options (advanced)].



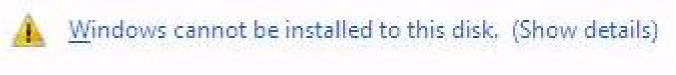
Where do you want to install Windows?

Name	Total Size	Free Space	Type
Disk 0 Unallocated Space	40.0 GB	40.0 GB	

Install Windows
Refresh
Load Driver
Drive options (advanced)
Next
1 Collecting information
2 Installing Windows

IMPORTANT: If the partition has already been created, go to step 15.

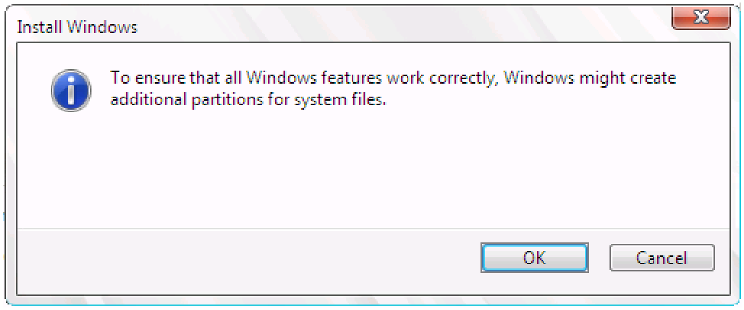
NOTE: The following message might be displayed when not replacing it with OS installation media after driver's reading. Please replace with OS installation media when it is displayed, and click "refresh".



Windows cannot be installed to this disk. (Show details)

13. Click [New], enter a partition size, and then click [Apply].

NOTE: When new partition is created, initial 100MB is assigned as boot partition by Windows OS.

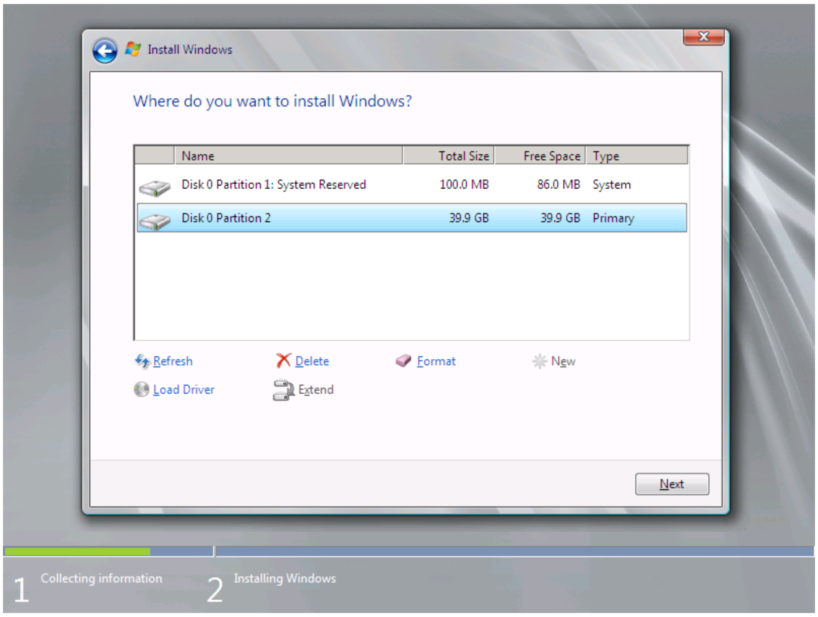


Install Windows

To ensure that all Windows features work correctly, Windows might create additional partitions for system files.

14. Select the partition created in step 13, and then click [Format].

15. Select the partition created, and then click [Next].



Install Windows

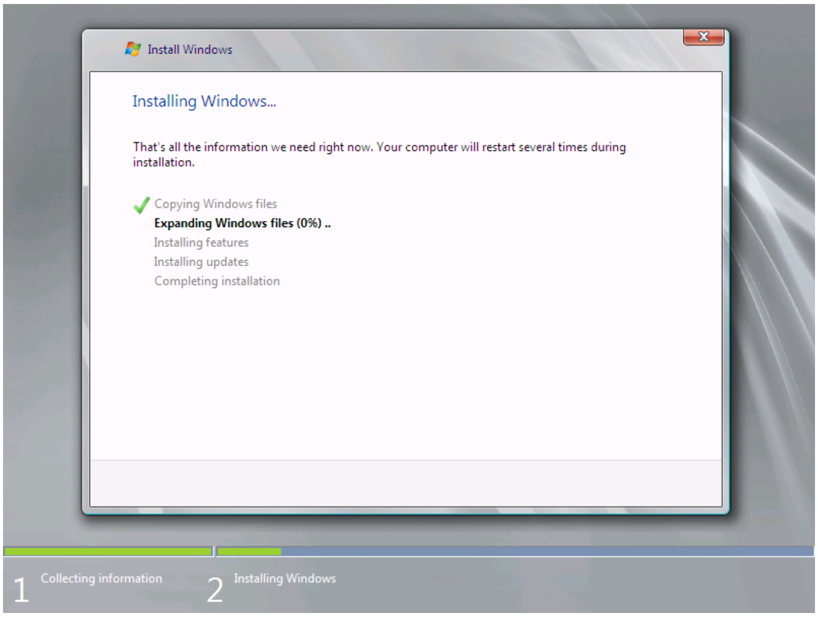
Where do you want to install Windows?

Name	Total Size	Free Space	Type
Disk 0 Partition 1: System Reserved	100.0 MB	86.0 MB	System
Disk 0 Partition 2	39.9 GB	39.9 GB	Primary

Refresh
Delete
Format
New
Load Driver
Extend
Next
1 Collecting information
2 Installing Windows

NOTE: The number of partitions displayed to a screen by environment of the use is different.

When the following message appears, the installation starts automatically.



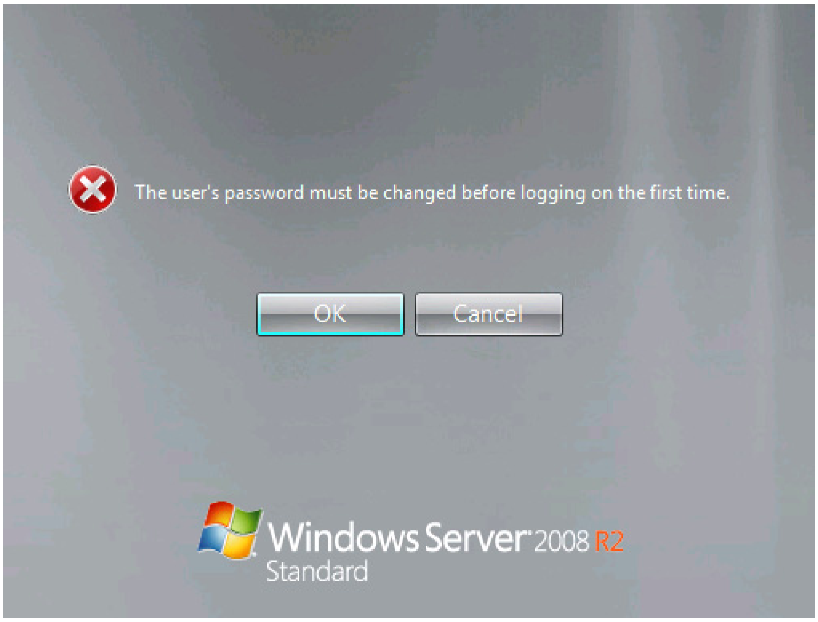
Installing Windows...

That's all the information we need right now. Your computer will restart several times during installation.

✓ Copying Windows files
Expanding Windows files (0%) ..
Installing features
Installing updates
Completing installation

Install Windows
1 Collecting information
2 Installing Windows

16. After a full installation of Windows Server 2008 R2 is completed, the following dialog box will prompt you to set or change the password before you log on. Click [OK].

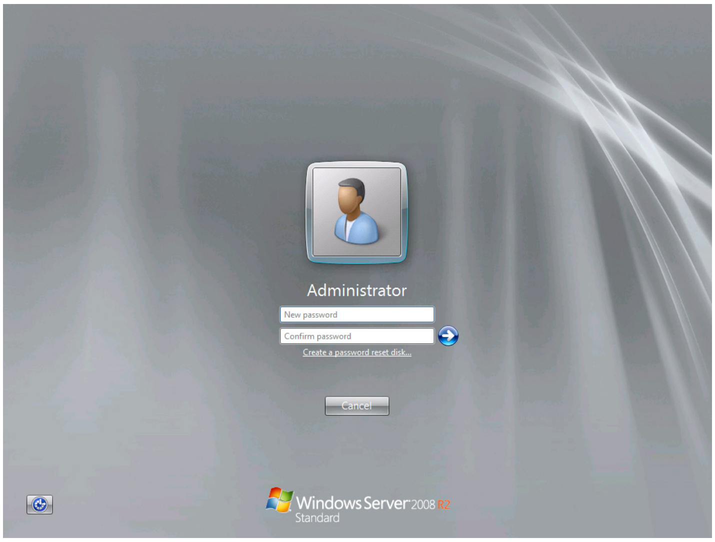


The user's password must be changed before logging on the first time.

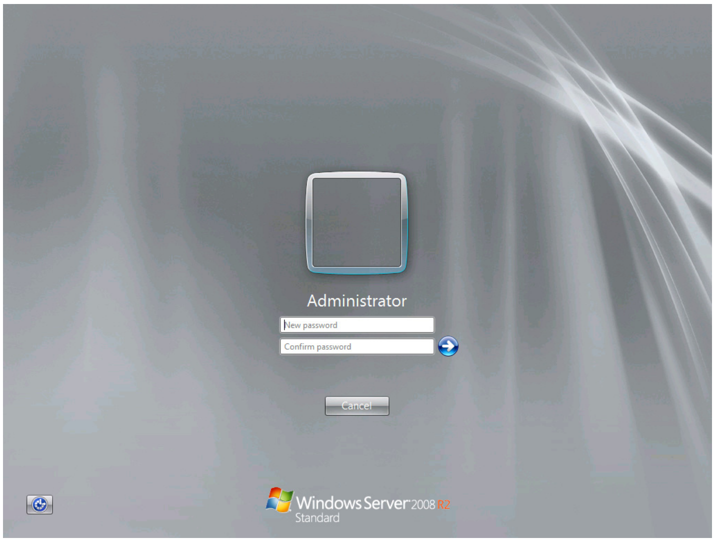
OK
Cancel
Windows Server 2008 R2
Standard

17. Change the password, and then click the [→] button.

– If you have selected a full installation


Administrator
New password
Confirm password
Create a password reset disk...
Cancel
Windows Server 2008 R2
Standard

– If you have selected a Server Core installation

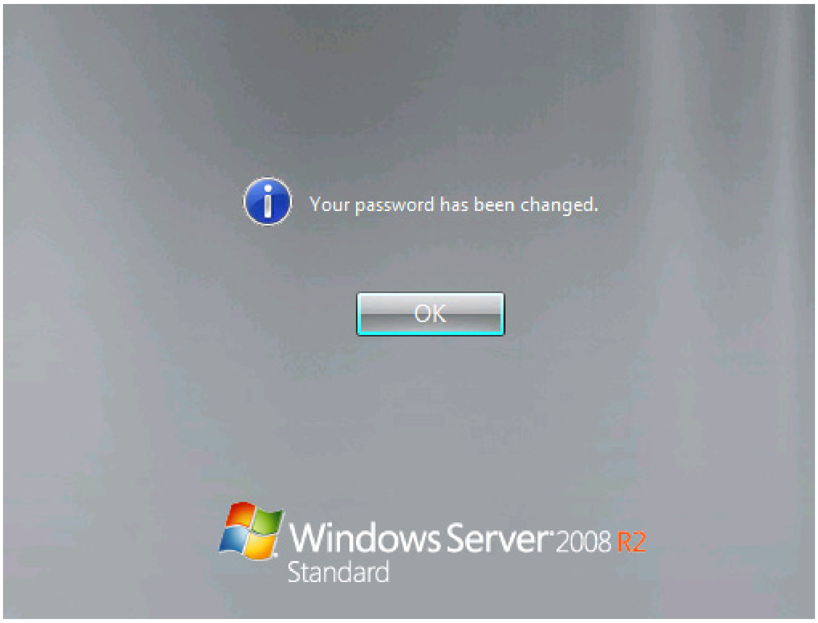

Administrator
New password
Confirm password
Cancel
Windows Server 2008 R2
Standard

NOTE: Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs)

---

18. When the following message appears, click [OK] to log on.

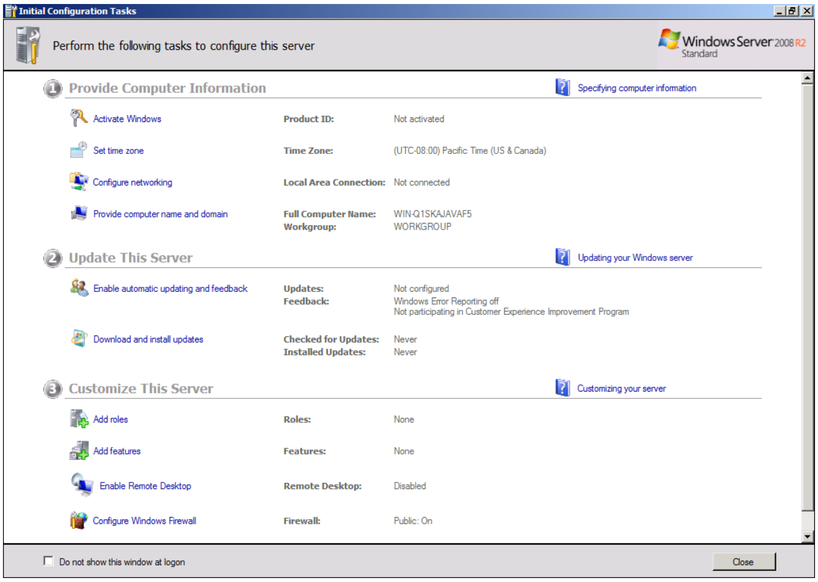


Your password has been changed.

19. Log on to the system.

The steps vary depending on the edition you selected in step 6.

- If you have selected a full installation
  On the [Initial Configuration Tasks] window, enter user information.



Initial Configuration Tasks

Perform the following tasks to configure this server

① Provide Computer Information — Specifying computer information

Activate Windows	**Product ID:**	Not activated
Set time zone	**Time Zone:**	(UTC-08:00) Pacific Time (US & Canada)
Configure networking	**Local Area Connection:**	Not connected
Provide computer name and domain	**Full Computer Name:** **Workgroup:**	WIN-Q1SKAJAVAF5 WORKGROUP

② Update This Server — Updating your Windows server

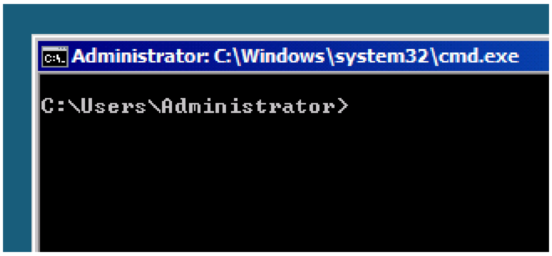
Enable automatic updating and feedback	**Updates:** **Feedback:**	Not configured Windows Error Reporting off Not participating in Customer Experience Improvement Program
Download and install updates	**Checked for Updates:** **Installed Updates:**	Never Never

③ Customize This Server — Customizing your server

Add roles	**Roles:**	None
Add features	**Features:**	None
Enable Remote Desktop	**Remote Desktop:**	Disabled
Configure Windows Firewall	**Firewall:**	Public: On

☐ Do not show this window at logon

- If you have selected a Server Core installation
  At the command prompt, enter user information.



```
C:\Users\Administrator>
```

NOTE: For more detailed procedure, see the "Microsoft Windows Server 2008 Step-By-Step Guide".

After installations is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" and "Updating the System" of this chapter.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2008 R2 is written.

NOTES:

- Execute the activation within 30 days.
- COA label may be attached to your server.

Updating the System

IMPORTANT: "Updating the System" disables the Scalable Networking Pack (SNP) function.

The setting of SNP function may affect the system performance, so refer to the attention of SNP detail in the following site before setting it.

http://www.nec.com/global/prod/express/

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security.

The system update is recommended.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

1. Log on to the system using an administrator account.
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.
3. Hereinafter, the setup process is depending on the content selected at [Installing Windows Server 2008], follow each of the instructions.
   - If you have selected a full installation
     If the menu is displayed, click [Setup Windows] and click [Update the system].

     NOTE: Right-clicking on the Menu produces the same outcome.

   - If you have selected a Server Core installation
     1) Execute the following command line from command prompt to specify the optical disk drive (e.g. D drive).

        ```
        cd /d d:\017\win\winnt\bin\oschk
        ```

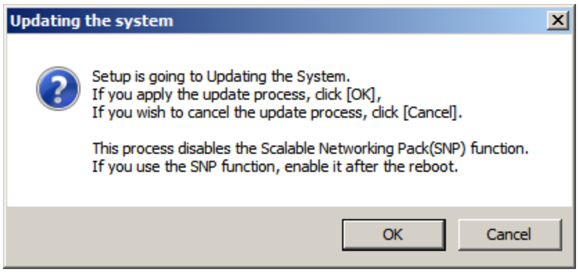
        ```
        C:\Users\administrator>cd /d D:\017\win\winnt\bin\oschk
        ```

     2) Type following command line and press **Enter**.

        ```
        oschk.bat
        ```

        ```
        D:\017\win\winnt\bin\oschk>oschk.bat
        ```

4. The following box appears.



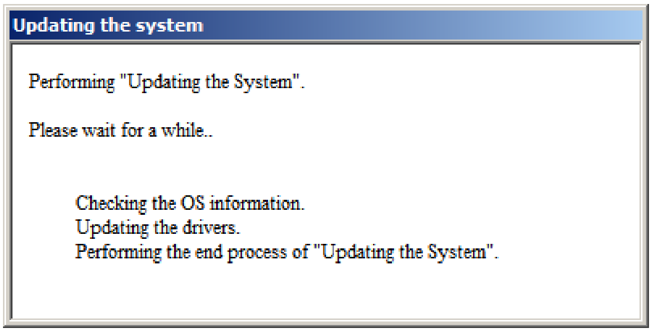
Setup is going to Updating the System.
If you apply the update process, click [OK],
If you wish to cancel the update process, click [Cancel].

This process disables the Scalable Networking Pack(SNP) function.
If you use the SNP function, enable it after the reboot.

5. Read the message, and then click [OK].

The update starts.

NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2008 R2. Wait until the update completes.

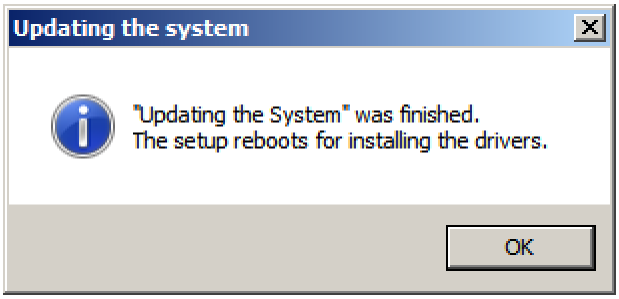


Performing "Updating the System".

Please wait for a while..

Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

6. When the following message appears, click [OK] to restart the system.



"Updating the System" was finished.
The setup reboots for installing the drivers.

The system has been updated.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, refer to the document attached to the driver.

LAN Driver and PROSet

Please refer to Chapter 5 "Installing and Setting Device Drivers" for Windows Server 2008 R2 to install and setup LAN driver and PROSet.

Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.
Standard graphics accelerator drivers will be installed automatically.

> **NOTE:** <Windows Server 2008>
>
> The graphics accelerator driver is supported only on a server running a full installation. Use VGA on a server running a Server Core installation.

Observe the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.

   If the autorun menu is displayed, close menu screen.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "setup.exe" in the following directory.

   \017\win\winnt\ws2008x64\video
4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD-ROM from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/107)

If you use the SCSI Controller N8103-75/107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing Fibre Channel Controller Driver (N8190-127/131/153/154)

If you use the Fibre Channel Controller N8190-127/131/153/154, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

About Windows Activation

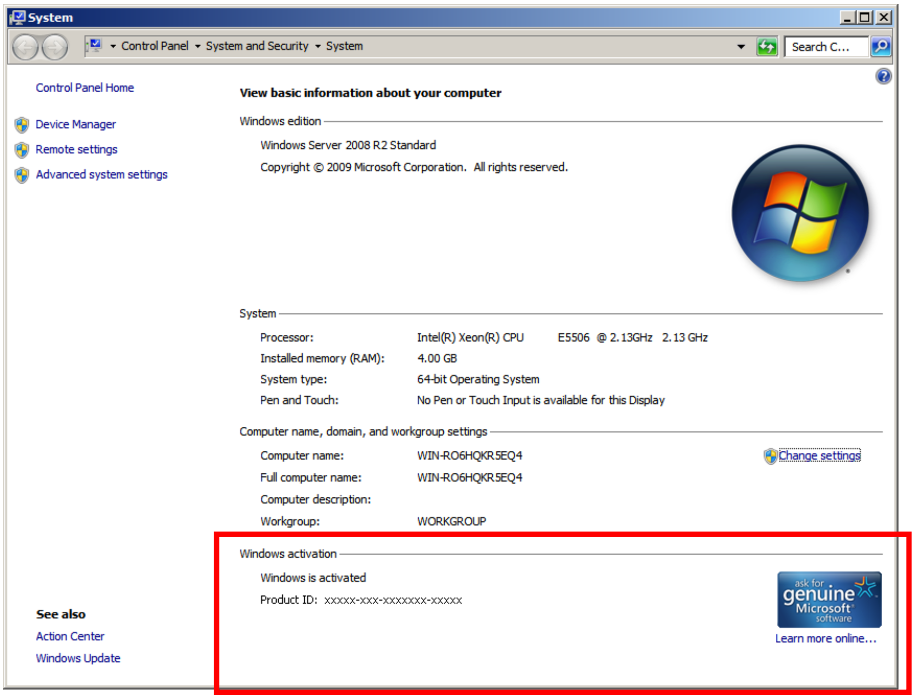
Windows Server 2008 R2 must be activated before you can use Windows Server 2008 R2.

Windows activation process is as follows.

For a server running a full installation

1. Select [Control Panel] and click [System and Security], then select [System].

> **IMPORTANT:** If the following message appears, Windows has already been activated on your system.


System
Control Panel ▸ System and Security ▸ System
Search C...
Control Panel Home
Device Manager
Remote settings
Advanced system settings
See also
Action Center
Windows Update
Change settings
ask for genuine Microsoft software
Learn more online...

View basic information about your computer

Windows edition

Windows Server 2008 R2 Standard

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System

Processor: Intel(R) Xeon(R) CPU E5506 @ 2.13GHz 2.13 GHz

Installed memory (RAM): 4.00 GB

System type: 64-bit Operating System

Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name: WIN-RO6HQKR5EQ4

Full computer name: WIN-RO6HQKR5EQ4

Computer description:

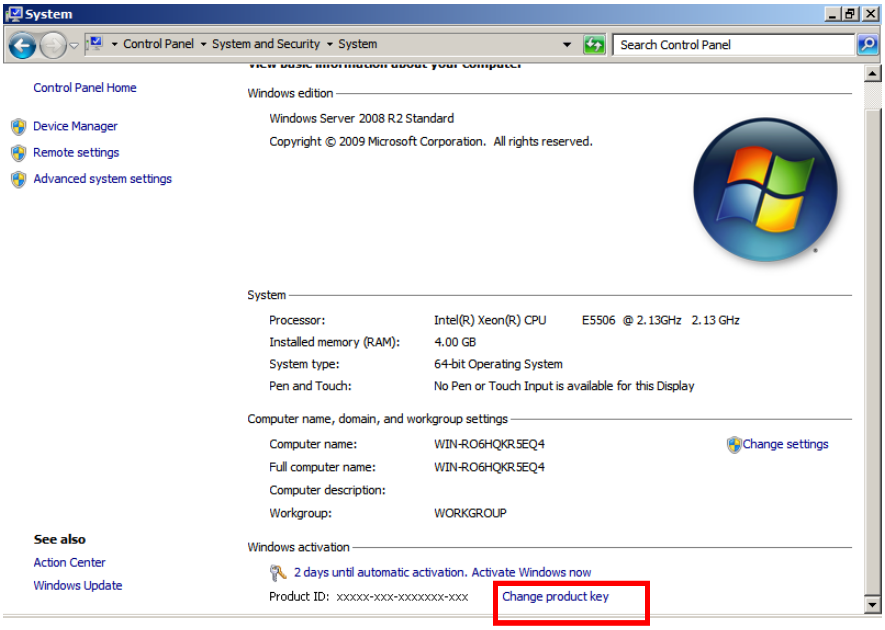
Workgroup: WORKGROUP

Windows activation

Windows is activated

Product ID: xxxxx-xxx-xxxxxxx-xxxxx

2. In the following screen, click [Change product key].


System
Control Panel ▸ System and Security ▸ System
Search Control Panel
Control Panel Home
Device Manager
Remote settings
Advanced system settings
See also
Action Center
Windows Update
Change settings
Change product key

Windows edition

Windows Server 2008 R2 Standard

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System

Processor: Intel(R) Xeon(R) CPU E5506 @ 2.13GHz 2.13 GHz

Installed memory (RAM): 4.00 GB

System type: 64-bit Operating System

Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name: WIN-RO6HQKR5EQ4

Full computer name: WIN-RO6HQKR5EQ4

Computer description:

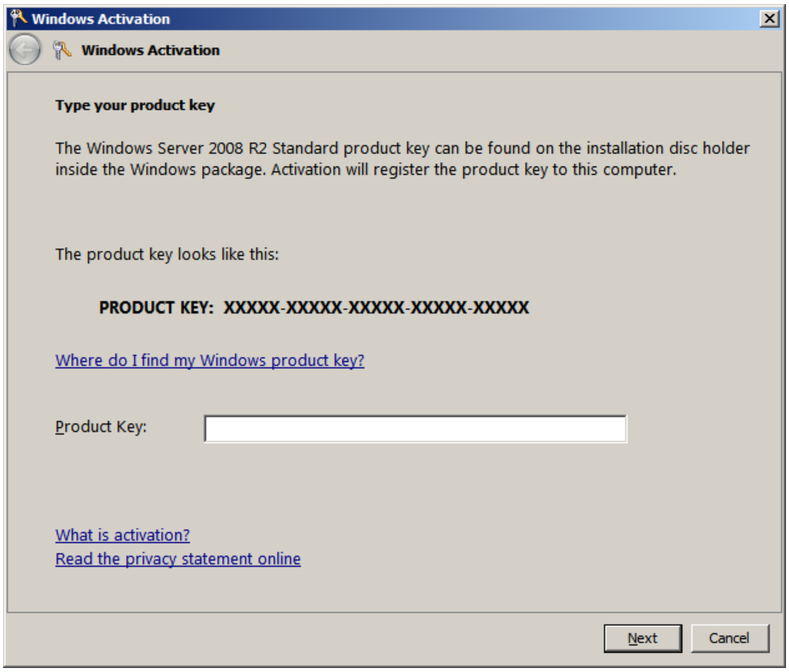
Workgroup: WORKGROUP

Windows activation

2 days until automatic activation. Activate Windows now

Product ID: xxxxx-xxx-xxxxxxx-xxx

3. Type the product key shown on your COA label, and click [Next].


Windows Activation
Windows Activation
Where do I find my Windows product key?
What is activation?
Read the privacy statement online
Next
Cancel

Type your product key

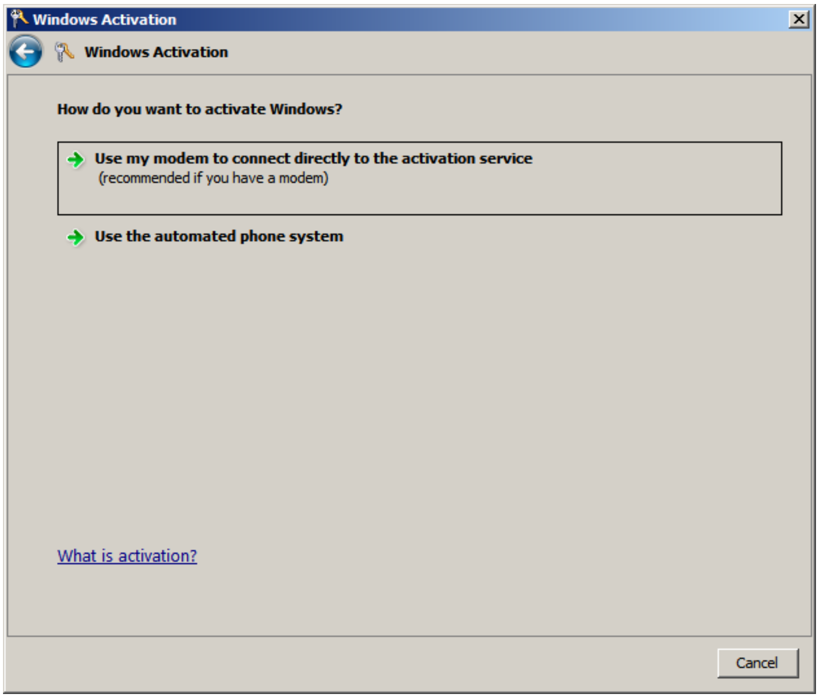
The Windows Server 2008 R2 Standard product key can be found on the installation disc holder inside the Windows package. Activation will register the product key to this computer.

The product key looks like this:

PRODUCT KEY: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

Product Key:

4. Activate Windows.


Windows Activation
Windows Activation

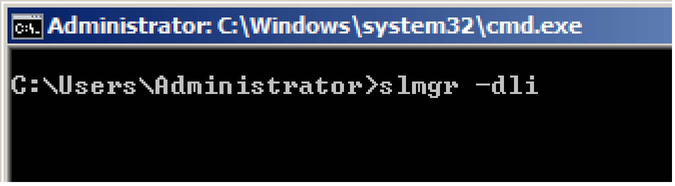
How do you want to activate Windows?

Use my modem to connect directly to the activation service
(recommended if you have a modem)
Use the automated phone system
What is activation?
Cancel

The Windows activation is complete.

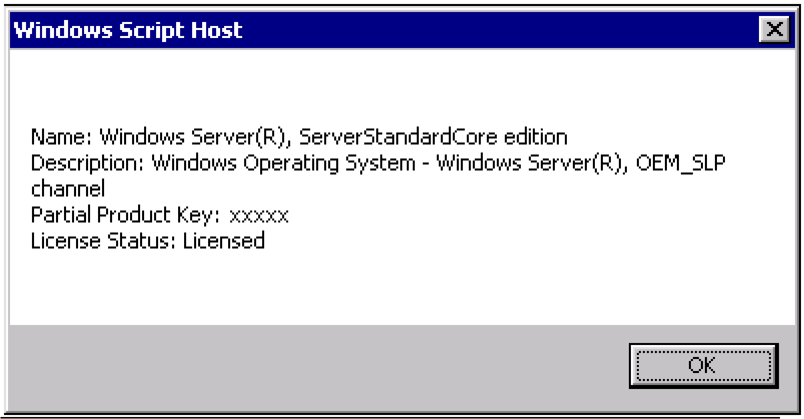
For a server running a Server Core installation

1. At the command prompt, type **slmgr –dli**, and press **Enter**.


Administrator: C:\Windows\system32\cmd.exe

```
C:\Users\Administrator>slmgr -dli
```

IMPORTANT: If the following message appears, Windows has already been activated on your system. Click ☒ to exit.

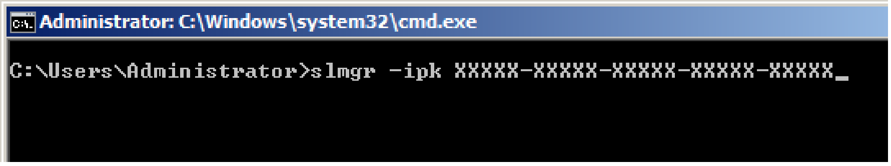

Windows Script Host
OK

Name: Windows Server(R), ServerStandardCore edition
Description: Windows Operating System - Windows Server(R), OEM_SLP channel
Partial Product Key: xxxxx
License Status: Licensed

---

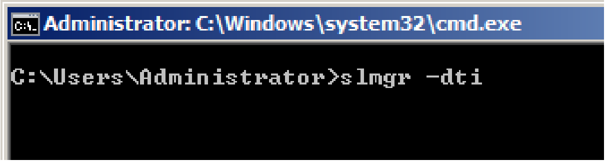
2. Type **slmgr –ipk <PID>**, and press **Enter**.

   * PID is your product key on the COA label.


Administrator: C:\Windows\system32\cmd.exe

```
C:\Users\Administrator>slmgr -ipk XXXXX-XXXXX-XXXXX-XXXXX-XXXXX_
```

3. Type **slmgr –dti** to obtain an installation ID for Windows activation, and press **Enter**.

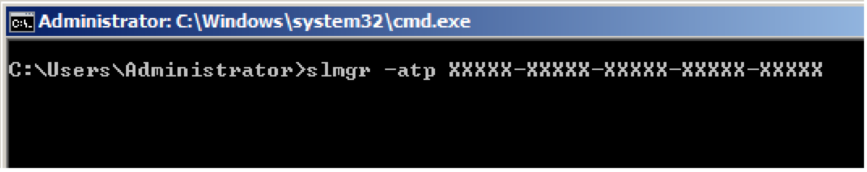

Administrator: C:\Windows\system32\cmd.exe

```
C:\Users\Administrator>slmgr -dti
```

4. See "%systemroot%\system32\sppui\phone.inf" for the phone number of the Microsoft customer service.

5. Call the above number, inform the representative of the installation ID which you obtained in step 3, and receive a confirmation ID.
6. At the command prompt, type **slmgr –atp <CID>**, and press **Enter**.

   * CID is the confirmation ID that you received from the call center.



```
C:\Users\Administrator>slmgr -atp XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
```

The Windows activation is complete.

SETTING FOR SOLVING PROBLEMS

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix E

Installing Windows Server 2008

This section explains how to install the Windows Server 2008.

NOTICE

Read the following notes or information before installing the Windows Server 2008.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD-ROM attached to your server supports the following optional boards:

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID controller (256MB, RAID 0/1)*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8190-127 Fibre Channel Controller*
  - N8190-131 Fibre Channel Controller (2ch)*
  - N8190-153 Fibre Channel Controller (1ch)*
  - N8190-154 Fibre Channel Controller (2ch)*

* Option

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD-ROM attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using [Disk Management], invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using [Disk Management] in [Computer Management].

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the System Partition Size

The system partition size can be calculated from the following formula.

When the system is Windows Server 2008 64-bit (x64) Edition:

Required partition size
= size required to install OS + paging file size + dump file size + application size

Size required to install OS	= 11,600MB (Full Installation) 12,300MB (Full Installation with Service Pack 2) 16,720MB (Full Installation + Service Pack 2) or = 4,100MB (Server Core Installation) 4,800MB (Server Core Installation with Service Pack 2) 9,220MB (Server Core Installation + Service Pack 2)
Paging file size (recommended)	= Installed memory size * 1.5
Dump file size	= Installed memory size + 300MB
Application size	= Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

11,600MB + (1,024MB * 1.5) + (1,024MB + 300MB) + application size
= 14,460MB + application size.

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

When the system is Windows Server 2008 32-bit (x86) Edition

Required partition size
= size required to install OS + paging file size + dump file size + application size

Size required to install OS = 6,300MB (Full Installation)
9,300MB (Full Installation with Service Pack 2)
9,400MB (Full Installation + Service Pack 2)

or

= 2,200MB (Server Core Installation)
5,200MB (Server Core Installation with Service Pack 2)
5,300MB (Server Core Installation + Service Pack 2)

Paging file size (recommended)= Installed memory size * 1.5

Dump file size = Installed memory size + 300MB

Application size = Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Depending on system configuration, 4096MB or more per partition might not be able to be set to the paging file size.
  Set it to 4095MB when the message to ask a value that is smaller than 4096MB is displayed.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 1GB (1,024MB) and a full installation of the operating system:

6,300MB + (1,024MB * 1.5) + 1,024MB + 300MB + application size
= 9,160MB + application size.

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

BitLocker

If you use BitLocker, note the following:

- Before you install Windows Server 2008, create two partitions:
  - System partition for a loader
  - Boot partition for the operating system

NOTE: For more information, see the following documentation in Microsoft TechNet.
"Windows BitLocker Drive Encryption Step-by-Step Guide"

- Be sure to keep the recovery password secure. Do not keep it around a server running BitLocker.

IMPORTANT: Without the recovery password, you cannot start the operating system and see the partition content encrypted by BitLocker.

The recovery password may be needed when you start the operating system after performing the following tasks:

- Replacing the motherboard
- Initializing the TPM
- Changing the BIOS setting

- Windows Server 2008 is not installed in the partition encrypted by BitLocker.

INSTALLING Windows Server 2008

Preparations for Installation

- NEC EXPRESSBUILDER DVD-ROM
- Microsoft Windows Server 2008 Standard (DVD-ROM) / Microsoft Windows Server 2008 Enterprise (DVD-ROM)
- User's Guide
- Getting Started
- Windows Server 2008 OEM-Disk for EXPRESSBUILDER

Windows Server 2008 Clean Installation

This section explains how to perform a clean installation of Windows Server 2008.

1. Turn on your system.

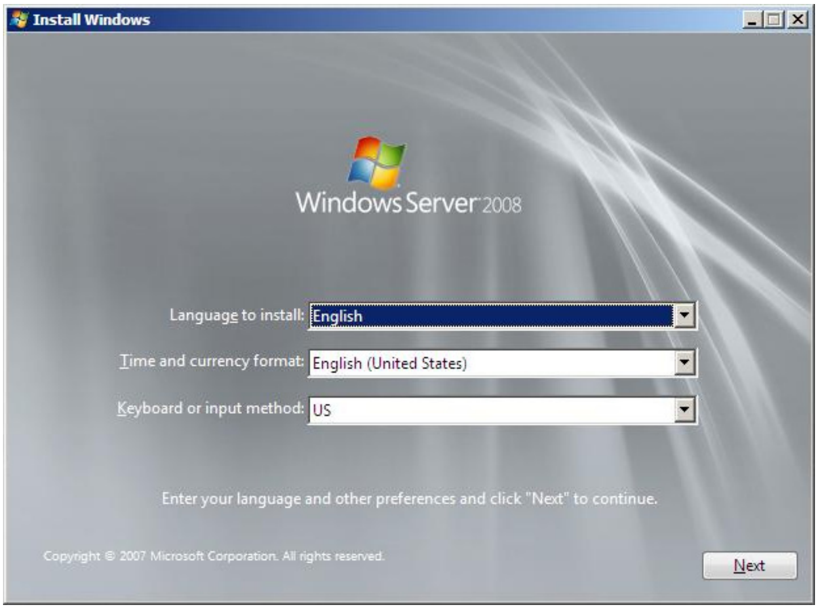
   IMPORTANT: To install Windows Server 2008, you may need to update BIOS. To check if your system needs a BIOS update, go to: http://www.nec.com/express/.

2. Insert the Windows Server 2008 DVD-ROM into your DVD-ROM drive.
3. Restart the system.
   To restart the system, press **Ctrl** + **Alt** + **Del** or turn off the system once, and then turn it on again.

   IMPORTANT: When prompted to [press any key to boot from CD or DVD], press **Enter** while the message is displayed. If the Windows installation screen (shown in step 4) does not appear, turn off the system, and then turn it on again.

   The DVD-ROM starts. A message "Windows is loading files …" appears.

4. Select a language and other options from the drop-down lists, and then click [Next].



Language to install: English

Time and currency format: English (United States)

Keyboard or input method: US

Enter your language and other preferences and click "Next" to continue.

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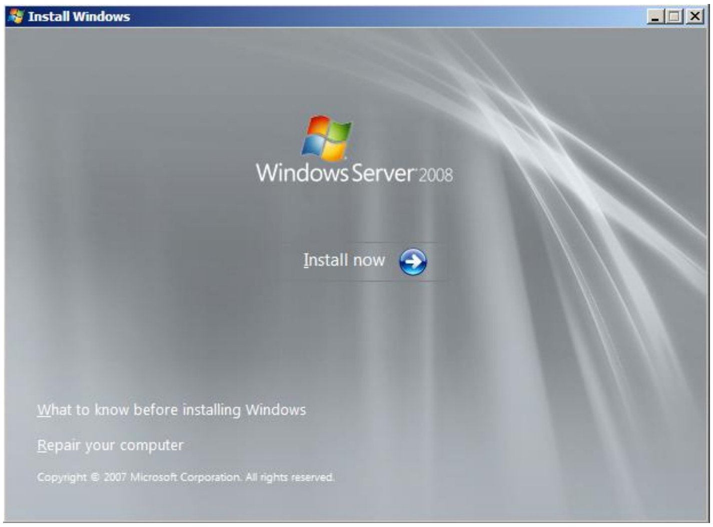
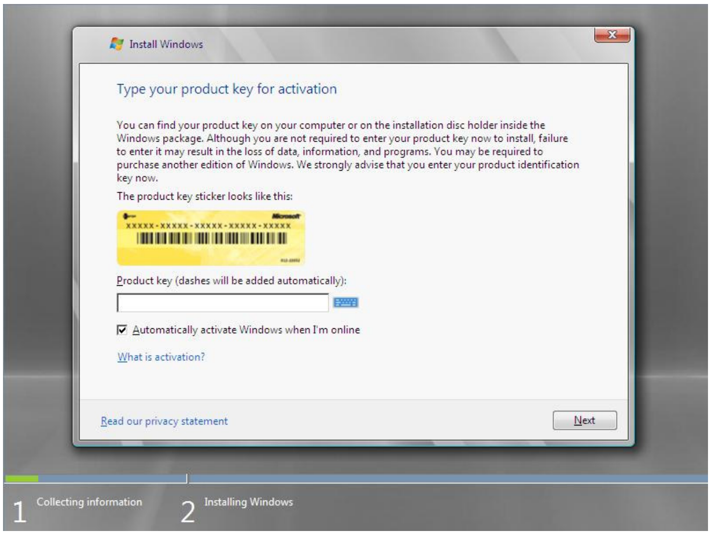
5. Click the [Install now ➔] button.

The installation starts.


Install Windows
Windows Server 2008
Install now
What to know before installing Windows
Repair your computer
Copyright © 2007 Microsoft Corporation. All rights reserved.

6. Enter your product key, and then click [Next].



Install Windows

Type your product key for activation

You can find your product key on your computer or on the installation disc holder inside the Windows package. Although you are not required to enter your product key now to install, failure to enter it may result in the loss of data, information, and programs. You may be required to purchase another edition of Windows. We strongly advise that you enter your product identification key now.

The product key sticker looks like this:

XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

Product key (dashes will be added automatically):

☑ Automatically activate Windows when I'm online

What is activation?

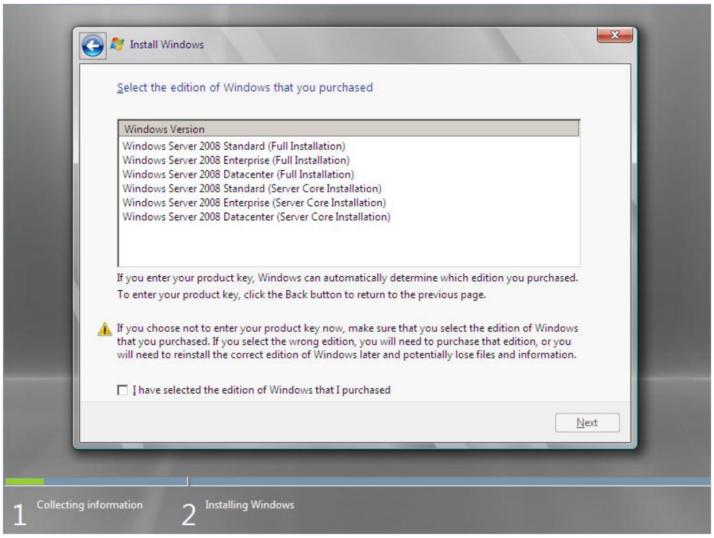
Read our privacy statement

Next
1 Collecting information
2 Installing Windows

7. Select the edition of the Windows operating system that you purchased.

Select [I have selected the edition of Windows that I purchased], and then click [Next].

You will see only possible editions that have been determined by Windows based on the key you entered in step 6.



Select the edition of Windows that you purchased

Windows Version
Windows Server 2008 Standard (Full Installation)
Windows Server 2008 Enterprise (Full Installation)
Windows Server 2008 Datacenter (Full Installation)
Windows Server 2008 Standard (Server Core Installation)
Windows Server 2008 Enterprise (Server Core Installation)
Windows Server 2008 Datacenter (Server Core Installation)

If you enter your product key, Windows can automatically determine which edition you purchased. To enter your product key, click the Back button to return to the previous page.

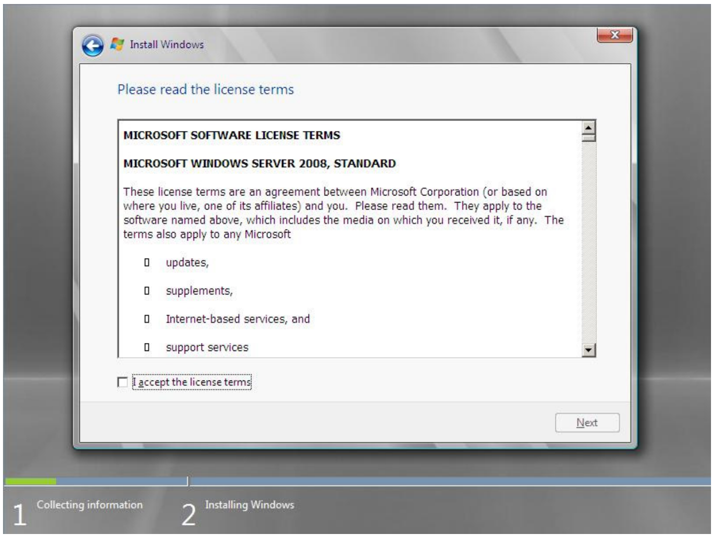
⚠ If you choose not to enter your product key now, make sure that you select the edition of Windows that you purchased. If you select the wrong edition, you will need to purchase that edition, or you will need to reinstall the correct edition of Windows later and potentially lose files and information.

☐ I have selected the edition of Windows that I purchased

NOTE: The Windows versions listed on the screen vary depending on the Windows Server 2008 DVD-ROM you are using.

---

8. Read the license terms carefully. If you agree, select [I accept the license terms], and then click [Next].



Please read the license terms

MICROSOFT SOFTWARE LICENSE TERMS

MICROSOFT WINDOWS SERVER 2008, STANDARD

These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft

▯ updates,

▯ supplements,

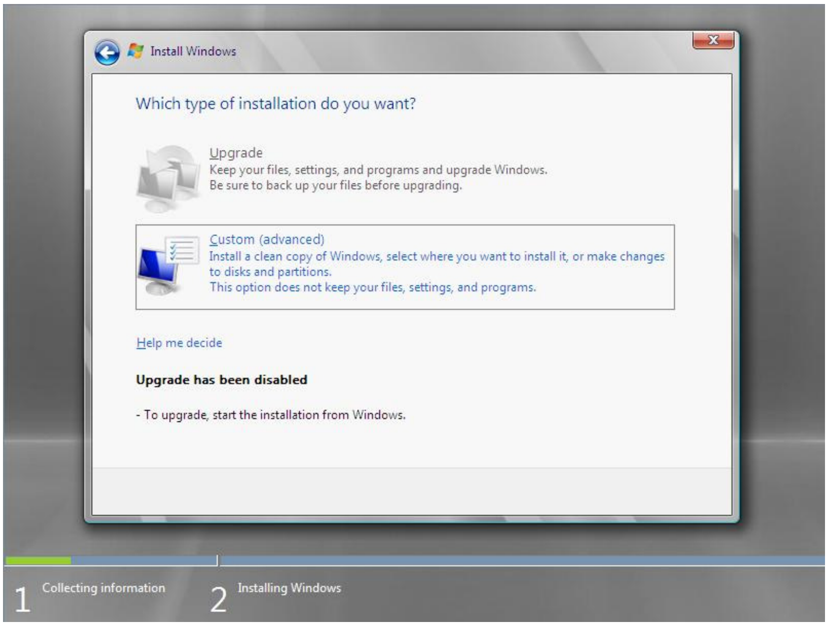
▯ Internet-based services, and

▯ support services

☐ I accept the license terms

9. Select the type of installation you want.

[Custom (advanced)] is selected below.



Install Windows

Which type of installation do you want?

Upgrade
Keep your files, settings, and programs and upgrade Windows.
Be sure to back up your files before upgrading.

Custom (advanced)
Install a clean copy of Windows, select where you want to install it, or make changes to disks and partitions.
This option does not keep your files, settings, and programs.

Help me decide

Upgrade has been disabled

- To upgrade, start the installation from Windows.

10. The screen of "Where do you want to install Windows?" is displayed.

NOTE: Please go to step 13 when you do not use the RAID Controller.

Remove the Backup DVD-ROM or Windows Server 2008 DVD-ROM and set NEC EXPRESSBUILDER DVD, and select [Load Driver].

Load Driver

To install the device driver needed to access your hard drive, insert the installation media containing the driver files, and then click OK.

NOTE: The installation media can be a floppy disk, CD, DVD, or USB flash drive.

[Browse] [OK] [Cancel]

Click [Browse], and go to Step 11.

11. The folder reference dialog box appears.

Select a path in the NEC EXPRESSBUILDER DVD, and then click [OK].

- If the N8103-129/130 RAID Controller is used:
  - Windows Server 2008 32-bit (x86) Edition
    <drive letter>:\017\win\winnt\oemfd\ws2008\fd1\megasas2
  - Windows Server 2008 64-bit (x64) Edition
    <drive letter>:\017\win\winnt\oemfd\ws2008x64\fd1\megasas2

After you select the path, a list of drivers is displayed.

Select the following driver, and then click [OK]. Go to Step 12.

- If the N8103-129/130 RAID Controller is used:

[LSI MegaRAID SAS 9264-8i]

12. Remove the NEC EXPRESSBUILDER DVD and set Backup DVD-ROM or Windows Server 2008 DVD-ROM.

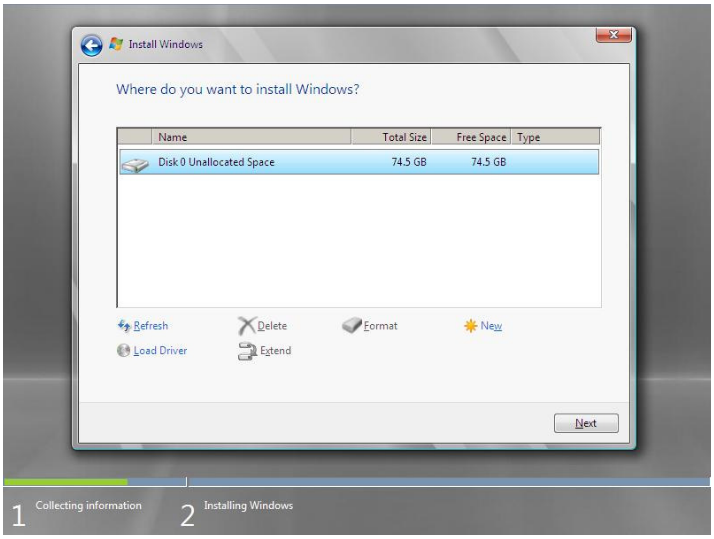
13. Select the disk where a partition will be created, and then click [Drive Option].

> **IMPORTANT:** If the partition has already been created, go to step 16.

14. Click [New], enter a partition size, and then click [Apply].

15. Select the partition created in step 14, and then click [Format].

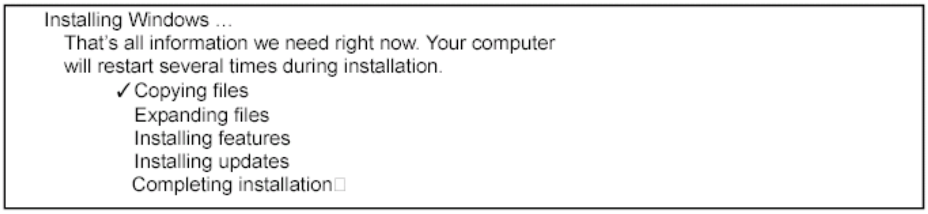
16. Select the partition created, and then click [Next].


Install Windows
Refresh
Delete
Format
New
Load Driver
Extend
Next
1 Collecting information
2 Installing Windows

Where do you want to install Windows?

Name	Total Size	Free Space	Type
Disk 0 Unallocated Space	74.5 GB	74.5 GB	

When the following message appears, the installation starts automatically.

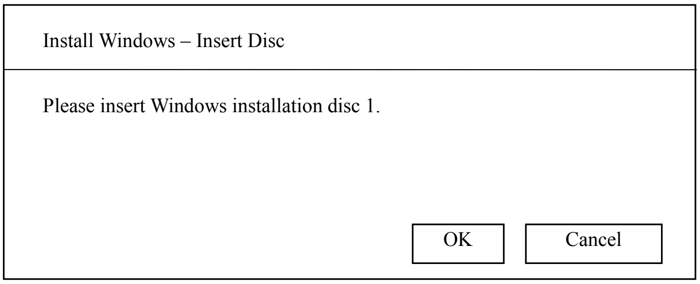


Installing Windows ...

That's all information we need right now. Your computer will restart several times during installation.

- ✓ Copying files
- Expanding files
- Installing features
- Installing updates
- Completing installation

NOTE: If the disk drive contains NEC EXPRESSBUILDER DVD-ROM, you will be prompted to replace a media with that for OS installation. Insert the install media according to the on-screen message.



Install Windows – Insert Disc

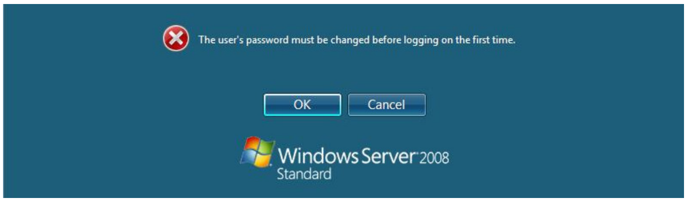
Please insert Windows installation disc 1.

---

17. Log on to the system. The steps vary depending on the edition you selected in step 7.

If you have selected a full installation

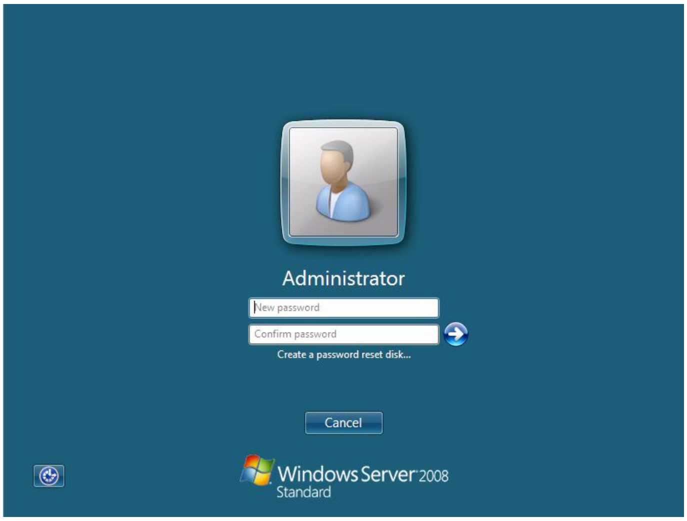
1. After a full installation of Windows Server 2008 is completed, the following dialog box will prompt you to set or change the password before you log on. Click [OK].



The user's password must be changed before logging on the first time.

OK
Cancel
Windows Server 2008
Standard

2. Change the password, and then click the ➔ button.



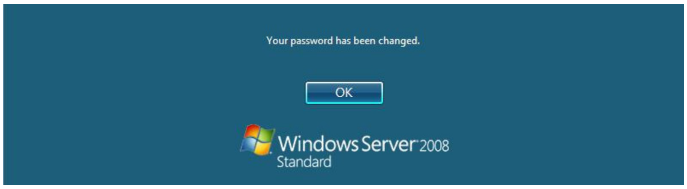
Administrator
New password
Confirm password
Create a password reset disk...
Cancel
Windows Server 2008
Standard

NOTE: Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

---

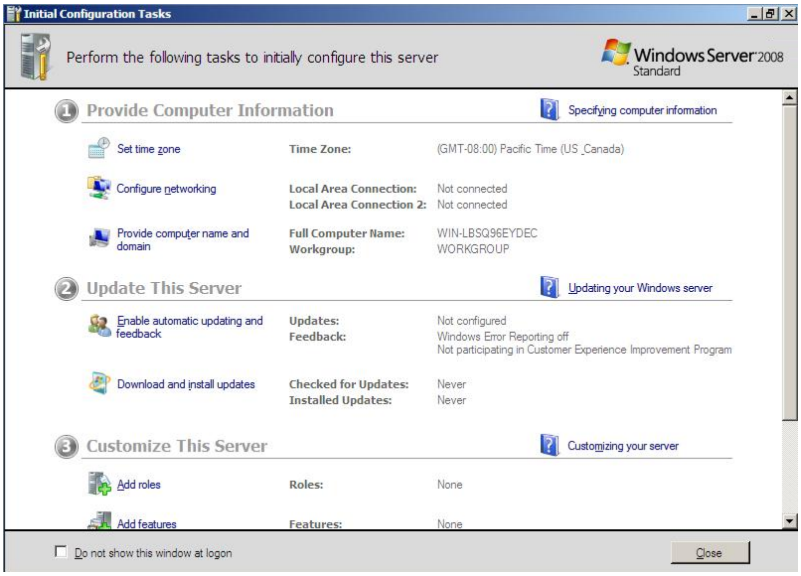
3. When the following message appears, click [OK] to log on.



Your password has been changed.

OK
Windows Server 2008
Standard

4. On the [Initial Configuration Tasks] window, enter user information.


Initial Configuration Tasks
Windows Server 2008 Standard
Specifying computer information
Set time zone
Configure networking
Provide computer name and domain
Updating your Windows server
Enable automatic updating and feedback
Download and install updates
Customizing your server
Add roles
Add features
Close

Perform the following tasks to initially configure this server

1 Provide Computer Information

Time Zone: (GMT-08:00) Pacific Time (US Canada)
Local Area Connection: Not connected
Local Area Connection 2: Not connected
Full Computer Name: WIN-LBSQ96EYDEC
Workgroup: WORKGROUP

2 Update This Server

Updates: Not configured
Feedback: Windows Error Reporting off
Not participating in Customer Experience Improvement Program
Checked for Updates: Never
Installed Updates: Never

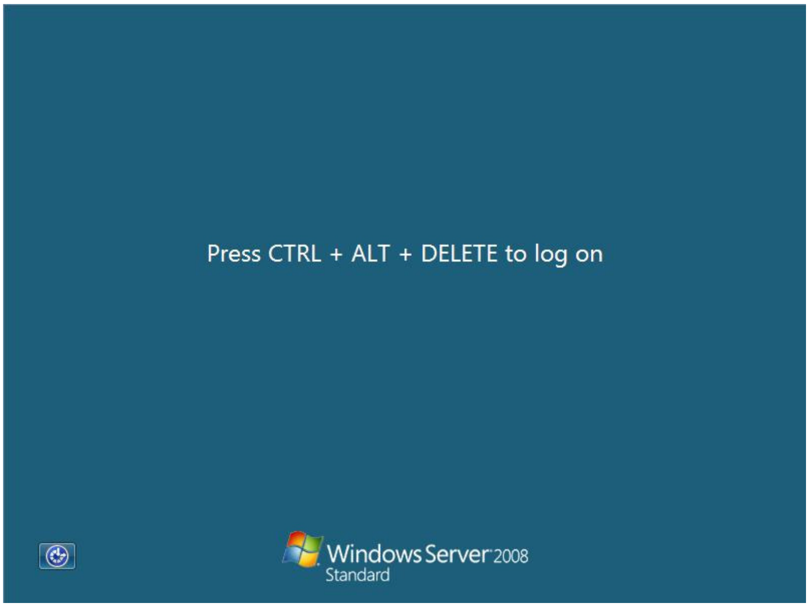
3 Customize This Server

Roles: None
Features: None

☐ Do not show this window at logon

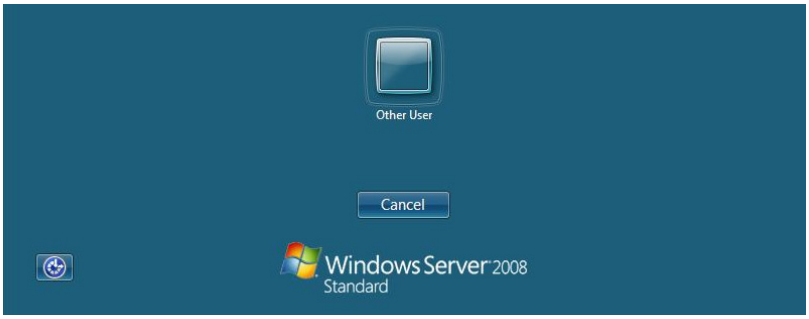
If you have selected a Server Core installation

1. After a Server Core installation of Windows Server 2008 is completed, press **Ctrl** + **Alt** + **Del**.

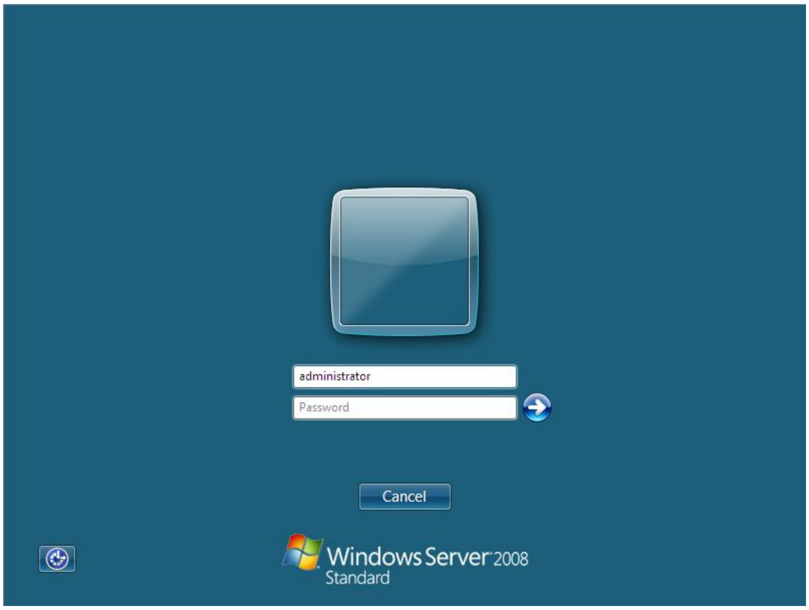

Windows Server 2008 Standard

Press CTRL + ALT + DELETE to log on

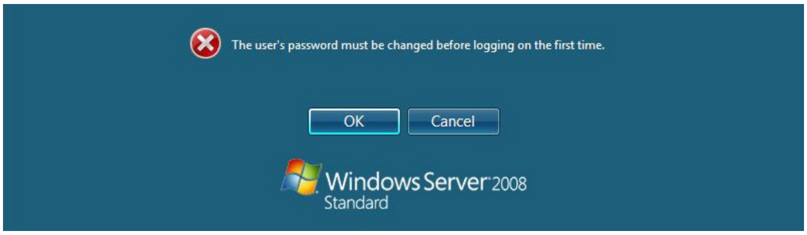
2. Select [Other User].


Other User
Cancel
Windows Server 2008
Standard

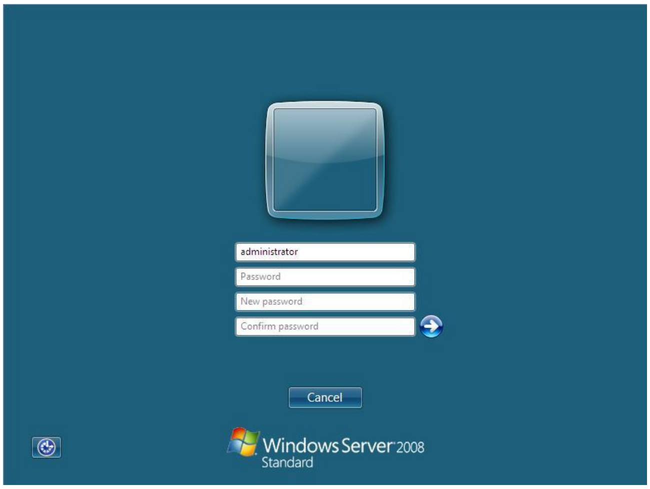
3. Log on to the system as an administrator.
   You need not enter your password in this dialog box. Click the ➔ button.


administrator
Password
Cancel
Windows Server 2008
Standard

4. Before you log on, you will be prompted to change the password. Click [OK].


The user's password must be changed before logging on the first time.
OK
Cancel
Windows Server 2008
Standard

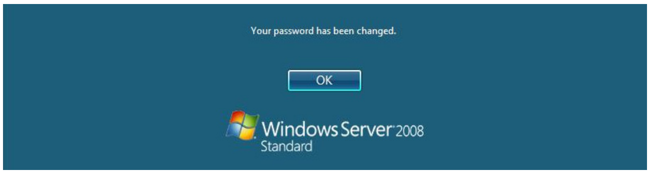
5. Change the password, and then click the ➔ button.


administrator
Password
New password
Confirm password
Cancel
Windows Server 2008
Standard

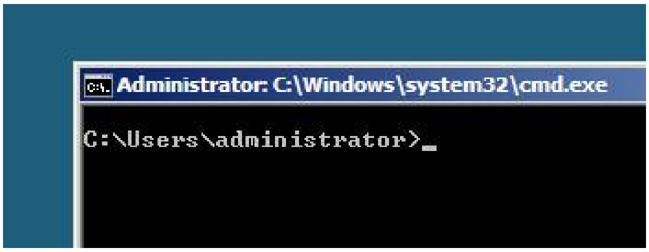
NOTE: Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

6. When the following message appears, click [OK].


Your password has been changed.
OK
Windows Server 2008
Standard

7. At the command prompt, enter user information.


Administrator: C:\Windows\system32\cmd.exe

```
C:\Users\administrator>_
```

NOTE: For more detailed procedure, see the "Microsoft Windows Server 2008 Step-By-Step Guide".

After installations is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" and "Updating the System" of this chapter.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2008 is written.

NOTES:

- Execute the activation within 60 days.
- COA label may be attached to your server.

Updating the System

IMPORTANT:

- "Updating the System" disables the Scalable Networking Pack (SNP) function.

  The setting of SNP function may affect the system performance, so please refer to the attention of SNP detail in the following site before setting it.
  http://www.nec.com/global/prod/express/
- Refer to the public information of SNP function when KB967224 is not applied.
  Notes are described about KB967224.

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security.

The system update is recommended.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

1. Log on to the system using an administrator account.
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.
3. Hereinafter, the setup process is depending on the content selected at [Installing Windows Server 2008], follow each of the instructions.
   - If you have selected a full installation
     If the menu is displayed, click [Setup Windows] and click [Update the system].

     NOTE: Right-clicking on the Menu produces the same outcome.

   - If you have selected a Server Core installation
     1) Execute the following command line from command prompt to specify the optical disk drive (e.g. D drive).

        cd /d d:\017\win\winnt\bin\oschk

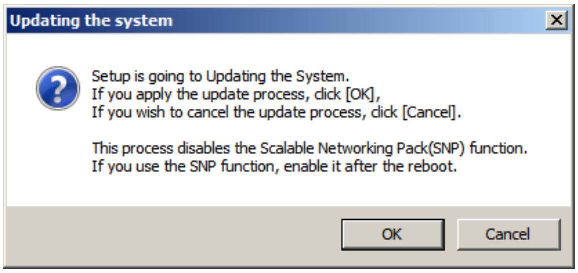
```
C:\Users\administrator>cd /d D:\017\win\winnt\bin\oschk
```

     2) Type following command line and press **Enter**.

        oschk.bat

```
D:\017\win\winnt\bin\oschk>oschk.bat
```

4. The following box appears.



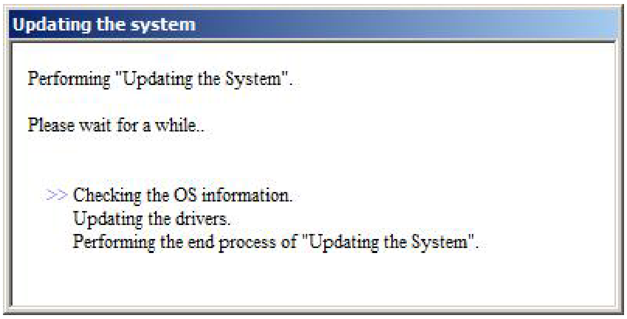
Setup is going to Updating the System.
If you apply the update process, click [OK],
If you wish to cancel the update process, click [Cancel].

This process disables the Scalable Networking Pack(SNP) function.
If you use the SNP function, enable it after the reboot.

5. Read the message, and then click [OK].

   The update starts.

NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2008. Wait until the update completes.



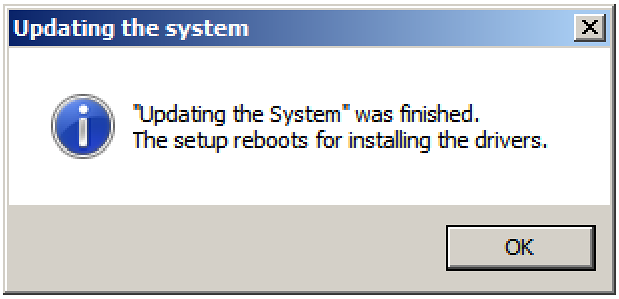
Performing "Updating the System".

Please wait for a while..

>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

---

6. When the following message appears, click [OK] to restart the system.



"Updating the System" was finished.
The setup reboots for installing the drivers.

The system has been updated.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

LAN Driver and PROSet

Please refer to Chapter 5 "Installing and Setting Device Drivers" for Windows Server 2008 to install and setup LAN driver and PROSet.

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.
Standard graphics accelerator drivers will be installed automatically.

NOTE: <Windows Server 2008>

The graphics accelerator driver is supported only on a server running a full installation. Use VGA on a server running a Server Core installation.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "Install.bat" in the following directory.
   - Windows Server 2008 64-bit (x64) Edition:

     \017\win\winnt\ws2008x64\video

   - Windows Server 2008 32-bit (x86) Edition:

     \017\win\winnt\ws2008\video

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER DVD-ROM from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing Fibre Channel Controller Driver (N8190-127/131/153/154)

If you use the Fibre Channel Controller N8190-127/131/153/154, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

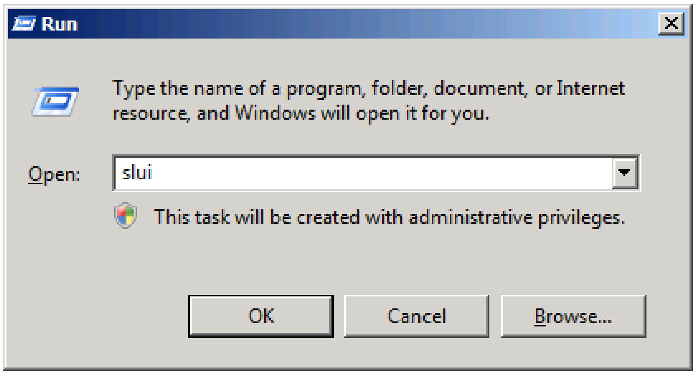
About Windows Activation

Windows Server 2008 must be activated before you can use Windows Server 2008.

Windows activation process is as follows.

For a server running a full installation

1. Go to the Start menu, and in the Run dialog box, type **slui**, and press **Enter**.

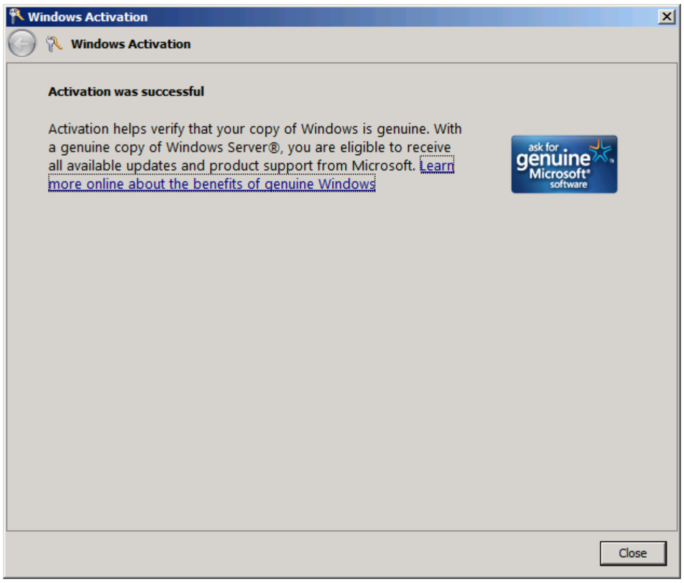

Run
OK
Cancel
Browse...

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: slui

This task will be created with administrative privileges.

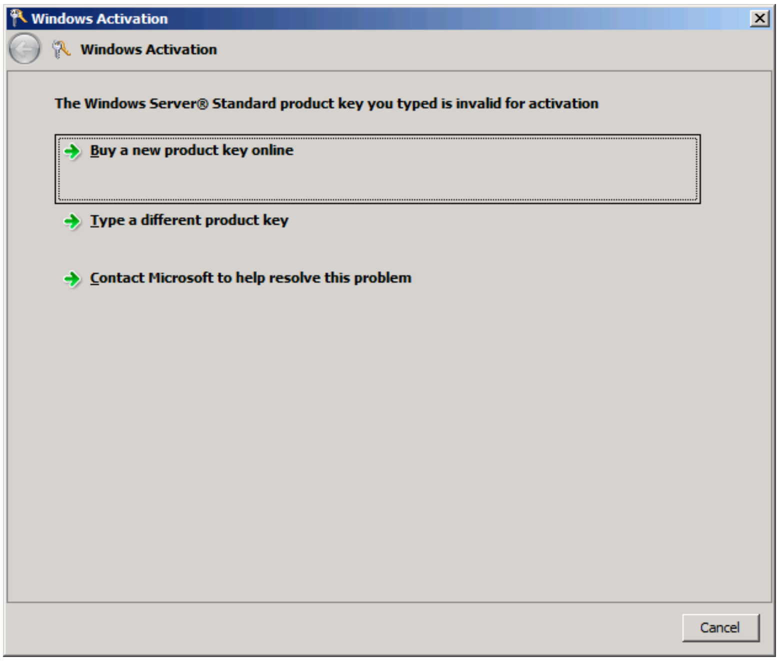
IMPORTANT: If the following message appears, Windows has already been activated on your system. Click [Close] to exit.


Windows Activation
Windows Activation
ask for genuine Microsoft software
Close

Activation was successful

Activation helps verify that your copy of Windows is genuine. With a genuine copy of Windows Server®, you are eligible to receive all available updates and product support from Microsoft. Learn more online about the benefits of genuine Windows

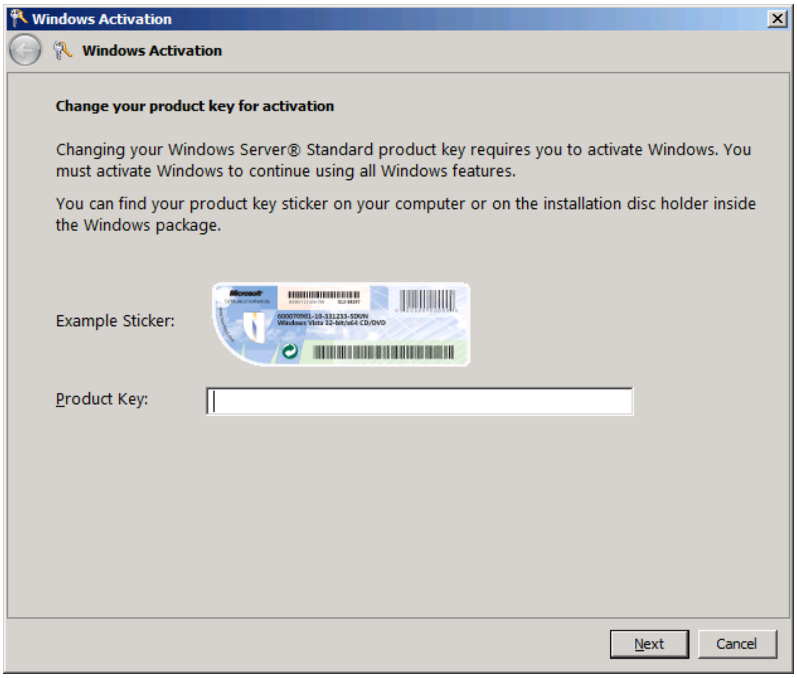
2. In the following screen, click [Type a different product key].



Windows Activation
Windows Activation
Buy a new product key online
Type a different product key
Contact Microsoft to help resolve this problem
Cancel

The Windows Server® Standard product key you typed is invalid for activation

3. Type the product key shown on your COA label, and click [Next].



Windows Activation
Windows Activation
Example Sticker:
Next
Cancel

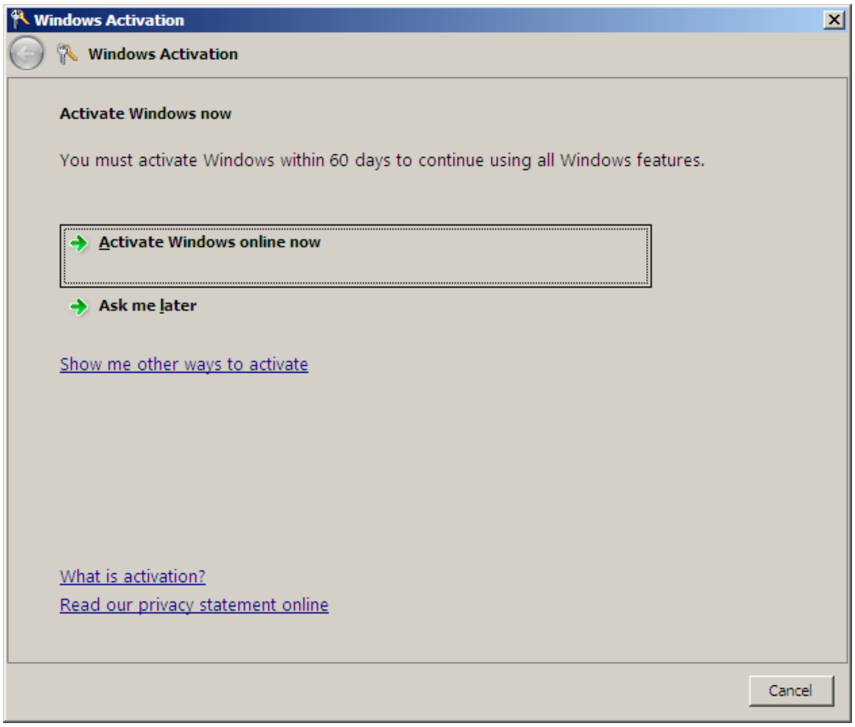
Change your product key for activation

Changing your Windows Server® Standard product key requires you to activate Windows. You must activate Windows to continue using all Windows features.

You can find your product key sticker on your computer or on the installation disc holder inside the Windows package.

Product Key:

4. Activate Windows.



Windows Activation
Windows Activation

Activate Windows now

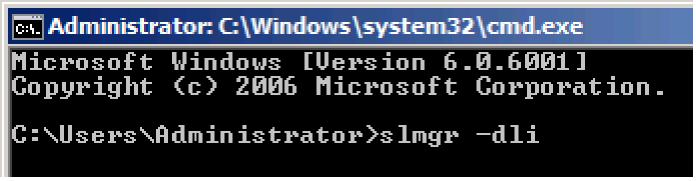
You must activate Windows within 60 days to continue using all Windows features.

Activate Windows online now
Ask me later
Show me other ways to activate
What is activation?
Read our privacy statement online
Cancel

The Windows activation is complete.

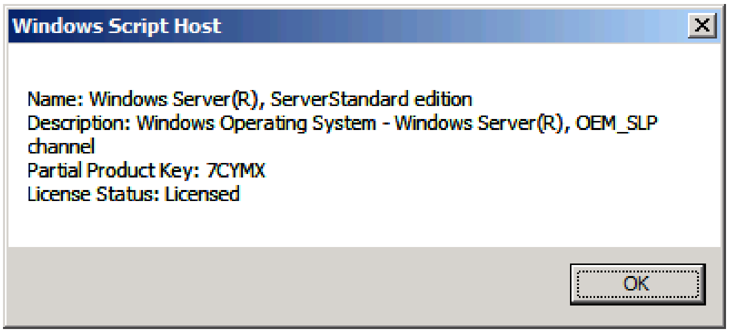
For a server running a Server Core installation

1. At the command prompt, type **slmgr –dli**, and press **Enter**.


Administrator: C:\Windows\system32\cmd.exe

```
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.

C:\Users\Administrator>slmgr -dli
```

IMPORTANT: If the following message appears, Windows has already been activated on your system. Click ☒ to exit.

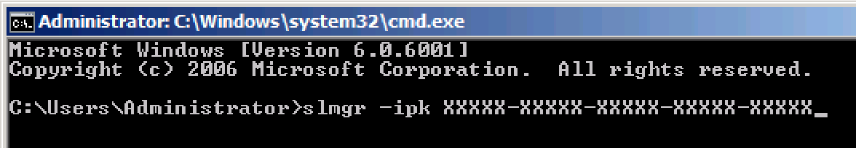

Windows Script Host
OK

Name: Windows Server(R), ServerStandard edition
Description: Windows Operating System - Windows Server(R), OEM_SLP channel
Partial Product Key: 7CYMX
License Status: Licensed

---

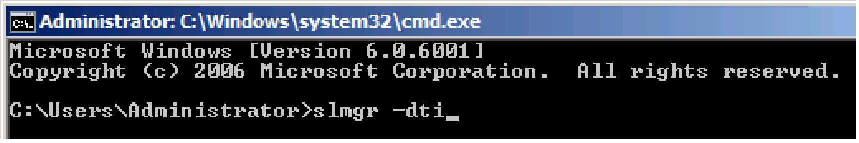
2. Type **slmgr –ipk <PID>**, and press **Enter**.

   * PID is your product key on the COA label.


Administrator: C:\Windows\system32\cmd.exe

```
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.  All rights reserved.

C:\Users\Administrator>slmgr -ipk XXXXX-XXXXX-XXXXX-XXXXX-XXXXX_
```

3. Type **slmgr –dti** to obtain an installation ID for Windows activation, and press **Enter**.


Administrator: C:\Windows\system32\cmd.exe

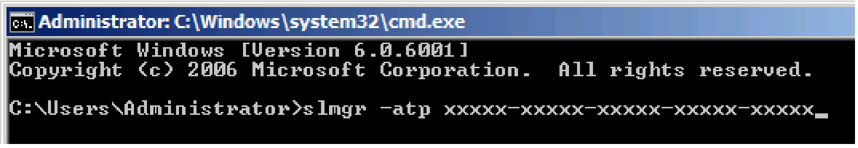
```
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.  All rights reserved.

C:\Users\Administrator>slmgr -dti_
```

4. See "%systemroot%\system32\slui\phone.inf" for the phone number of the Microsoft customer service.

5. Call the above number, inform the representative of the installation ID which you obtained in step 3, and receive a confirmation ID.

6. At the command prompt, type **slmgr –atp <CID>**, and press **Enter**.

   * CID is the confirmation ID that you received from the call center.


Administrator: C:\Windows\system32\cmd.exe

```
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation.  All rights reserved.

C:\Users\Administrator>slmgr -atp xxxxx-xxxxx-xxxxx-xxxxx-xxxxx_
```

The Windows activation is complete.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

IMPORTANT: "PAE option" is not supported on Windows Server 2008 Standard.

In Windows Server 2008 system, the PAE option can be set by using Bcdedit.exe.

The setting procedure is as follows.

1. Click [Run] on [Start] menu.
2. Type "cmd.exe" in the [Open:] box to start command prompt.
3. Execute following command line.

   ```
   bcdedit /set pae forceenable
   ```
4. Reboot the system.

   The setting mentioned above enables after reboot.
5. Execute following command line on command prompt.

   ```
   bcdedit
   ```

   Confirm "pae ForceEnable" exists in "Windows boot loader".

The setting for PAE option is now completed.

Refer following site about Bcdedit.exe.

"Boot Configuration Data Editor Frequently Asked Questions"

http://technet.microsoft.com/en-us/library/cc721886(WS.10).aspx

SETTING FOR SOLVING PROBLEMS

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix F

Installing Windows Server 2003 x64 Editions

This section explains how to install the Windows Server 2003 x64 Editions.

NOTICE

Read the following notes or information before installing the Windows Server 2003 x64 Editions.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD-ROM attached to your server supports the following optional boards:

NOTE: If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID controller (256MB, RAID 0/1)*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*

* Option

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD-ROM attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2 x64 Edition
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk drive upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the System Partition Size

The system partition size can be calculated from the following formula.

Required partition size
= Size necessary to install the system + Paging File Size + Dump File Size + Application Size

Size necessary to install the system = 4100MB (Windows Server 2003 x64 Editions)
= 4100MB (Windows Server 2003 x64 Editions with ServicePack 2)
= 5900MB (Windows Server 2003 x64 Editions + Service Pack 2 CD-ROM)
Paging File Size (Recommended) = Mounted Memory Size * 1.5
Dump file Size = Mounted Memory Size + 1MB
Application Size = Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 1MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 1G (1,024MB), the partition size will be calculated by the above formula as follows:

4,100MB + (1,024MB * 1.5) + (1,024MB + 1MB) + Application Size
= 6,661MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING Windows Server 2003 x64 Editions

Preparations for Installation

- NEC EXPRESSBUILDER DVD-ROM
- Microsoft Windows Server 2003 R2 Standard x64 Edition (CD-ROM) / Microsoft Windows Server 2003 R2 Enterprise x64 Edition (CD-ROM)
- Windows Server 2003 x64 Editions Service Pack 2 (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER

Creating "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003 x64 Editions, you do not need to create it again.

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER with the following two procedures.

Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 Server to create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 or Windows can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-Disk for Windows] from [Tools Menu] step.
6. Connect the Flash FDD or the USB floppy disk drive.
   (If you use the floppy disk drive, insert a floppy disk into it.)
7. Select [Create an Windows Server 2003 x64 Editions OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].

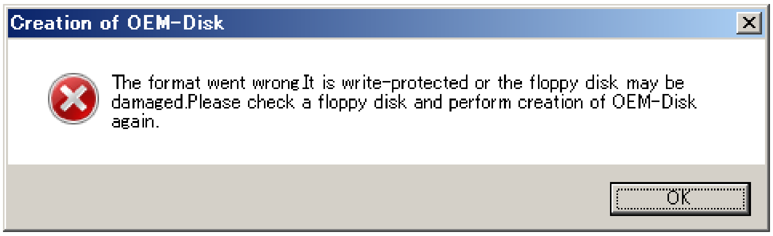
8. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

Write-protect and attach a label, then keep it safely.

IMPORTANT

If you have created "OEM-Disk" in the Flash FDD, disconnect the Flash FDD after NEC EXPRESSBUILDER had been shut down.

NOTE: If the following message is displayed, the floppy disk is write-protected.



The format went wrong.It is write-protected or the floppy disk may be damaged.Please check a floppy disk and perform creation of OEM-Disk again.

Cancel write-protected state.

If you have already cancelled write-protected state, connect the floppy disk drive again.

Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003(or later).

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.

2. Start the Operating System.

3. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.

The Menu will appear.

4. Connect the Flash FDD or the USB floppy disk drive.
(If you use the floppy disk drive, insert a floppy disk into it.)

5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003 x64 Edition].

NOTE: You can do the same operation with the menu appeared by the Right-click.

6. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

Write-protect and attach a label, then keep it safely.

Windows Server 2003 x64 Editions Clean Installation

This section explains how to perform a clean installation of Windows Server 2003 x64 Editions.

IMPORTANT:

- If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
- If you have created OEM-Disk into the floppy disk, connect the USB floppy disk drive before you start the system.

1. Turn on the system power.

2. Insert the Windows Server 2003 x64 Edition CD-ROM into the optical disk drive.

3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

If no bootable operating system exists on the hard disk drive, this step is unnecessary.

The Windows Server 2003 x64 Editions setup screen will appear.

If the screen is not displayed, **Enter** was not pressed properly.

Begin after turning on the system power again.

4. If the RAID Controller/Option Controller is used, press **F6** in a few seconds when the window is in either of the following states.

- "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
- A screen with a solid blue background is displayed.

IMPORTANT:

- There is no visible indication on screen when **F6** has been pressed.
- If the RAID Controller/Option Controller is not used, you do not need to press **F6**, and go to Step 12.

5. The following message is displayed.

```
Setup could not determine the type of one or more mass storage devices installed
in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage devices.
```

<If the RAID Controller is used>

Press S, and go to Step 6.

<If the RAID Controller is not used>

Go to Step 8.

6. The following message is displayed.

```
              Please insert the disk labeled
   manufacturer-supplied hardware support disk
                      into Drive A:
              *Press ENTER when ready.
```

If you use the floppy disk drive, insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

NOTE: If you use the Flash FDD, the message above is not displayed.

A list of mass storage devices is displayed.

IMPORTANT: If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.

7. Select the proper Controller and press **Enter**.

– [LSI MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]
(When N8103-129/130 RAID Controller is installed.)

The screen of Step 5 is displayed.

8. <If the SCSI Controller N8103-75/107 is connected>

Press **S**.

The screen of Step 6 is displayed. Press Enter, and go to Step 9.

<If the SCSI Controller N8103-75/107 is not connected>

Go to Step 10.

9. A list of mass storage devices is displayed.

Select the [Adaptec Ultra320 SCSI Cards (Windows 64-bit)] and press **Enter**.

IMPORTANT: If the following message is displayed when you use the N8103-75/107 SCSI controller, press **S**.

```
The driver you provided seems to be newer
than the Windows default driver.
Windows already has a driver that you can use
for "Adaptec Ultra 320 SCSI Cards
(Windows64-bit)"
Unless the device manufacturer prefers that
you usethe driver on the floppy disk, you
should use the driver in Windows.
```

The screen of Step 5 is displayed.

Go to Step 10.

10. <If the SAS Controller N8103-104A is connected>

Press **S**.

IMPORTANT:

- Insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER into the floppy disk drive. If the floppy disk drive has already contained Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, you do not need to insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.
- If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 11.

<If the SAS Controller N8103-104A is not connected>

Press **Enter**, and go to Step 12.

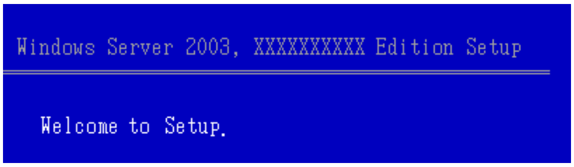
11. A list of mass storage devices is displayed.

Select the [LSI Fusion-MPT SAS Driver (Server 2003 x64)] and press **Enter**.

The screen of Step 5 is displayed.

Press **Enter**, and go to Step 12.

12. When the following message is shown, press **Enter** to start "Welcome to Setup".



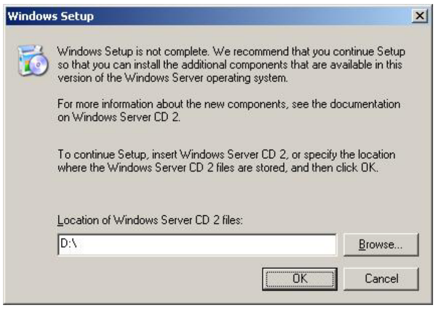
```
Windows Server 2003, XXXXXXXXXX Edition Setup

  Welcome to Setup.
```

IMPORTANT: If you install Windows Server 2003 x64 Editions on the hard disk larger than 2,097,152MB (2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

---

13. When the installation of Windows Server 2003 x64 Edition has finished, the system reboots automatically.

14. The [Windows Setup] screen will be displayed after logged on to the system.



Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.

For more information about the new components, see the documentation on Windows Server CD 2.

To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.

Location of Windows Server CD 2 files: D:\

IMPORTANT:

- In this case, the [Windows Setup] screen may not be displayed.
  Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 after the application of "System update".
  Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2.
  In this case, note that the [Windows Setup] screen is not displayed.

---

15. Insert Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM into the optical disk drive.
Confirm the parameters and click [OK].

16. When the installation has completed, remove Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM from the optical disk drive, and restart the system.

After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this chapter.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 is written.

NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
- COA label may be attached to your server.

Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

It is necessary to use ServicePack2 or more. ServicePack 2 need not be applied again when Windows Server 2003 x64 Editions CD-ROM where ServicePack 2 is included is used and it is installed.

If you install Windows Server 2003 x64 Editions CD-ROM which contains Service Pack 2, you do not have to apply "Hotfix for Windows x64" or "Hotfix for Windows Server 2003 (KB921411)".

Go to the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

IMPORTANT: In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

- Modified system configuration
- Recovered the system using recovery process.

NOTE: If you use Windows Server 2003 x64 Editions CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

Application Process of the Hotfix (KB921411)

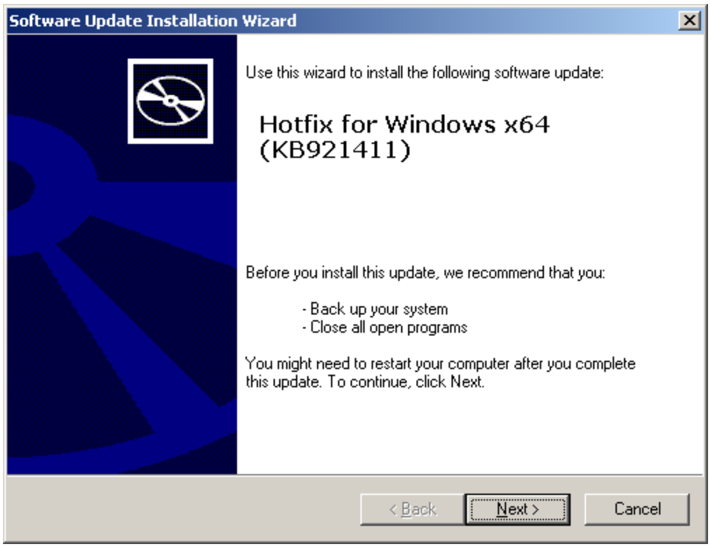
Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.

   <When Windows Server 2003 x64 Editions is used>

   \017\win\winnt\w2k3amd\qfe\enu\kb921411.exe
4. When the following message is displayed, click [Next].

   After that, follow the message to continue the process.



Software Update Installation Wizard

Use this wizard to install the following software update:

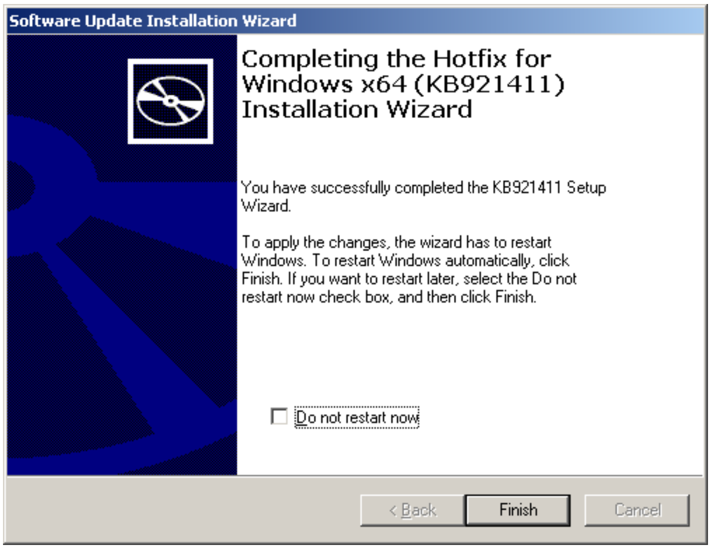
Hotfix for Windows x64 (KB921411)

Before you install this update, we recommend that you:

- Back up your system
- Close all open programs

You might need to restart your computer after you complete this update. To continue, click Next.

5. When the following message is displayed, make sure to click [Finish] to restart the system.



Completing the Hotfix for Windows x64 (KB921411) Installation Wizard

You have successfully completed the KB921411 Setup Wizard.

To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.

☐ Do not restart now

With that, application process of the Hotfix (KB921411) is finished.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows x64 (KB921411) or Hotfix for Windows Server 2003 (KB921411) had been applied.

NOTE: If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

---

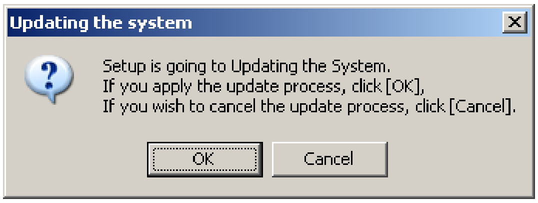
1. Log on to the system with the account that has administrative privilege (e.g. administrator).
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of server.

   The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

NOTE: Right-clicking on the Autorun Menu produces the same outcome.

---

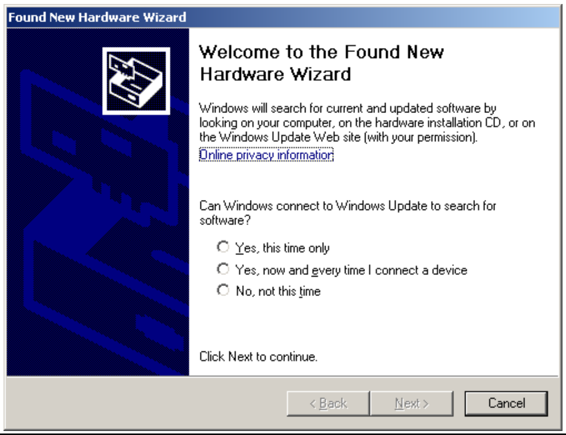
4. When the following message appears, click [OK].



Setup is going to Updating the System.
If you apply the update process, click [OK],
If you wish to cancel the update process, click [Cancel].

IMPORTANT: There is no problem in operation though the following messages might be displayed while executing "Updating the system".

It will disappear after a few seconds, and do not click [Cancel] while it is displayed.



Welcome to the Found New Hardware Wizard

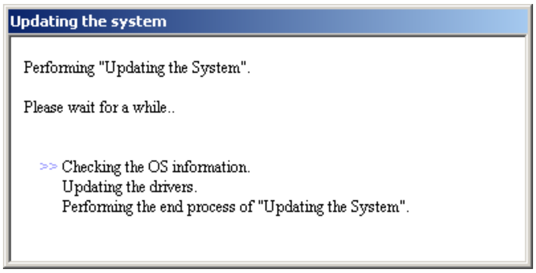
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).

Can Windows connect to Windows Update to search for software?

○ Yes, this time only
○ Yes, now and every time I connect a device
○ No, not this time

Click Next to continue.

NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2003 x64 Edition. Wait until the update completes.



Updating the system

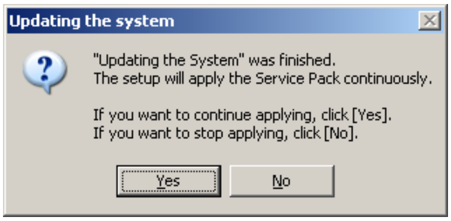
Performing "Updating the System".

Please wait for a while..

>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

---

5. When the following message appears, "Updating the System" was finished.



Updating the system

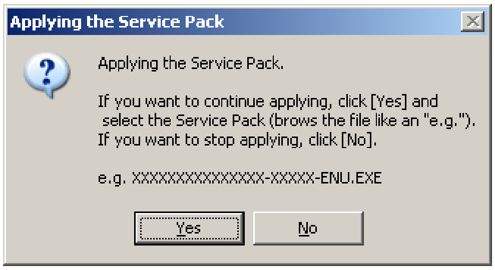
"Updating the System" was finished.
The setup will apply the Service Pack continuously.

If you want to continue applying, click [Yes].
If you want to stop applying, click [No].

When you apply Service Pack: Click [Yes], and then go to Step 6.

When you don't apply Service Pack: Click [No], and then go to Step 8.

6. When the following message appears, click [Yes].



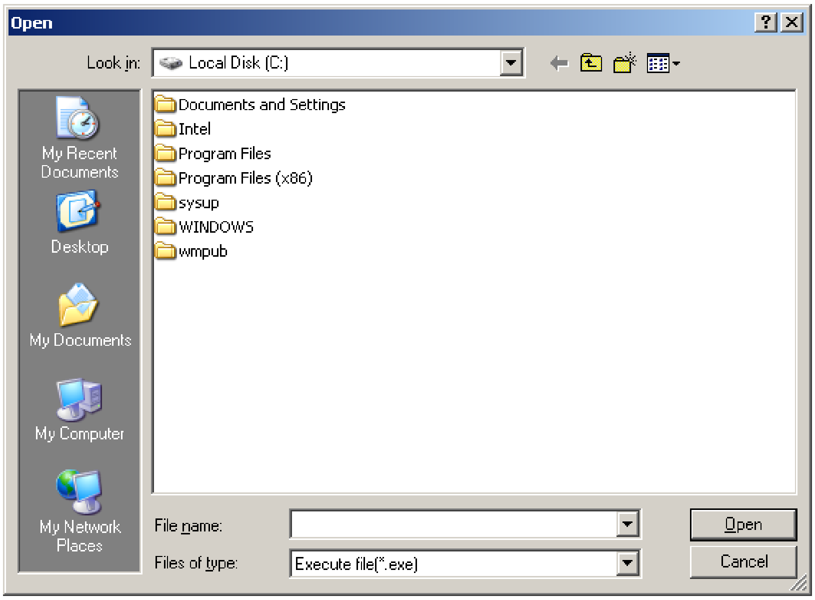
Applying the Service Pack

Applying the Service Pack.

If you want to continue applying, click [Yes] and
select the Service Pack (brows the file like an "e.g.").
If you want to stop applying, click [No].

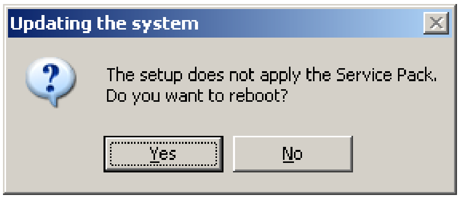
e.g. XXXXXXXXXXXXXXX-XXXXX-ENU.EXE

7. When the following message appears, select a Service Pack and click [Open] and then, according to a message, please apply it.



Open
Look in: Local Disk (C:)
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
Documents and Settings
Intel
Program Files
Program Files (x86)
sysup
WINDOWS
wmpub
File name:
Files of type: Execute file(*.exe)
Open
Cancel

8. When the following message appears, click [Yes] to restart the system.



Updating the system

The setup does not apply the Service Pack.
Do you want to reboot?

The system has been updated.

Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows x64 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows x64 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].

   Hide extensions for know file type

   Hide protected operating system files [Recommended]

   When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].
4. Make sure of the files.

   Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

   If you can not found them, copy the files according to the following process.

   (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.

   (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".
5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows x64 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

   With that, process is finished.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

LAN Driver and PROSet

LAN Driver

LAN drivers will be installed automatically.

PROSet

NOTE: All of the operation that related to IntelR PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.

Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog.

Click [OK] button will cause temporary loss of network connectivity.

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \017\win\winnt\w2k3amd\r148\apps\prosetdx\winx64

   The [Intel(R) PROSet - InstallShield Wizard] dialog starts.

4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click[Finished].
9. Remove the NEC EXPRESSBUILDER DVD-ROM from the optical disk drive, restart the system.

LAN Driver Setting

■ Link Speed

LAN drivers will be installed automatically, but the link speed and Duplex mode need to be specified manually.

IP addresses is not be able to set when the "Internet Protocol (TCP/IP)" check box OFF.

This phenomenon will occur with the certain condition.

Check ON the "Internet Protocol (TCP/IP)" check box and IP address will be able to set.

When PROSet is not installed

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

When PROSet is installed

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].
5. Restart the system.

■ WOL

Refer to the following procedure for WOL (Wake On LAN) setting.

When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click following adapter.

   Open the adapter [Properties].

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection]

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection #2]
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Using WOL	Not using WOL
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	ON or OFF	OFF

IMPORTANT:

- Set "Allow this device to bring..." "ON", WOL by Directed Packet(*1) or Magic Packet will available on Standby and Hibernate state.
- WOL by Directed Packet is not available on Shutdown state.

*1 Packet with the Ethernet address of the adapter in Ethernet header or Packet with an IP address assigned to the adapter in IP header.

4. Click [Advanced] tab and point to [Enable PME].
5. Set in [Value] as follows.
   - Using WOL : ON
   - Not using WOL: OFF
6. Click [OK].
7. Restart the system.

When PROSet is installed

1. Start Device Manager.
2. Point to [Network adapters] and double click following adapter.

   Open the adapter [Properties].

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection]

   [Intel(R) 82576 Gigabit Dual Port Server Network Connection #2]
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Using WOL	Not using WOL
"Wake On Directed Packet"	ON or OFF	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	ON	OFF
"Wake on Link"	OFF	OFF

IMPORTANT: WOL do not work by DirectedPacket (* 1) on shutdown state even "Wake On Directed Packet" is "ON".(WOL work by DirectedPacket on sleep and hibernate state.)

*1 Packet with the Ethernet address of the adapter in Ethernet header or Packet with an IP address assigned to the adapter in IP header.

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

4. Click [OK].
5. Restart the system.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

Setup Team

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

Switch Fault Tolerance (SFT) is a feature that provides a failover relationship between two ports when each port is connected to a separate switch.

SFT supports two ports per team.

Static Link Aggregation (SLA) accounts for the GEC and 802.3ad static protocols.

SLA is a switch-assisted teaming mode and requires configuring ports at both ends of the link: server interfaces and switch ports.

IMPORTANT:

- AFT/ALB setup must be operated after system update and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing(ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
- Confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
- Teaming is not supported with Windows Server Core.
- If you want to change the type of a teaming, be sure to remove the teaming first, then re-setup a new teaming. Do not use the function of PROSet to change the type of a teaming.

Create Team

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].
6. Select a team mode, and then click [Next].

   > **IMPORTANT:** Following team types are supported.
   >
   > - Adapter Fault Tolerance
   > - Adaptive Load Balancing
   > - Static Link Aggregation
   > - Switch Fault Tolerance

7. Click [Finish].
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team.

   Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.
   - Set Primary

     Point the adapter and click [Set Primary] button.
   - Set Secondary

     Point the adapter and click [Set Secondary] button.

   > **NOTE:** Adapter priority config can be confirmed by the following procedure:
   >
   > 1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
   > 2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

    Confirm the result in [Test results]
11. Restart the system.

Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter is not existing in [Network adapters] tree and restart the system.

LAN Board Driver (N8104-111/112/119/120/121/122/125A/126)

Install the driver stored in NEC EXPRESSBUILDER DVD.

Installation of LAN Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and uncheck the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-111)], specify [\017\win\winnt\w2k3amd\r148\pro100\winx64\ndis5x].

   Then click [Next].

   When using [(N8104-112/119/120/121/122/125A/126)], specify [\017\win\winnt\w2k3amd\r148\pro1000\winx64\ndis5x].

   Then click [Next].
7. Click [Finish].
8. Restart the system.

LAN Board Driver (N8104-123A)

To install the driver, refer to the installation manual provided with the board and according to the installation manual, use the driver stored in attached CD-ROM.

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "Install.bat" in the following directory.

   \017\win\winnt\w2k3amd\video\install.bat

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER DVD-ROM from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/107)

If you use the SCSI Controller N8103-75/107, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

The SCSI Controller driver will be installed automatically.

Installing SCSI Controller Driver (N8103-95)

If you use the SCSI Controller N8103-95, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

The SAS Controller driver will be installed automatically.

About Windows Activation

Windows Server 2003 x64 Editions must be activated before you can use Windows Server 2003 x64 Editions.

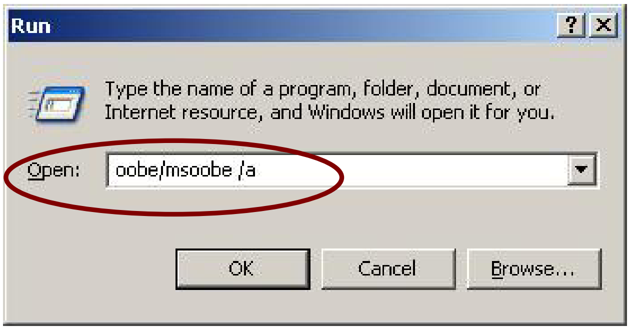
Windows activation process is as follows.

NOTE: When you use Windows Server 2003 R2 x64 Editions BackUp CD-ROM, activation process is not needed.

1. Click [Run] on [Start] menu.

   Type as follows in the [Open:] box, and click [OK].

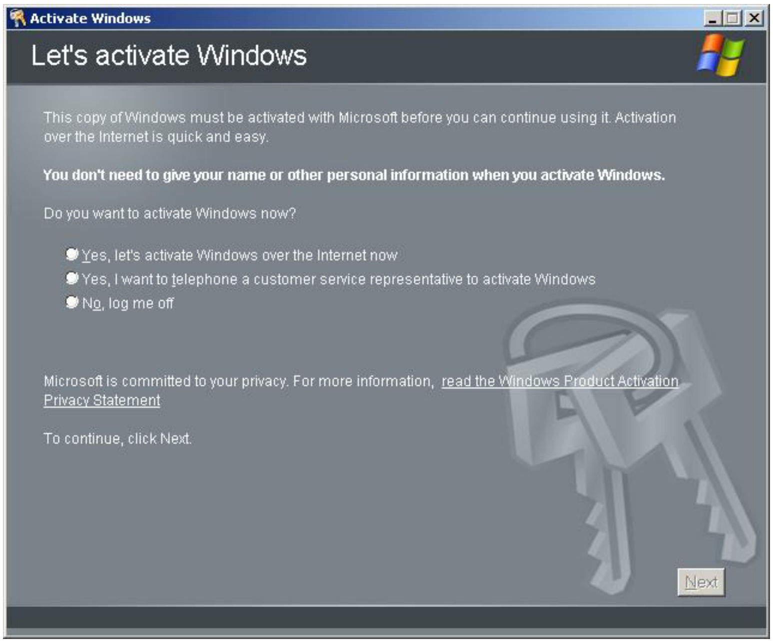
   oobe/msoobe /a



Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: oobe/msoobe /a

2. When the screen as follows is displayed, click [Next].



Let's activate Windows

This copy of Windows must be activated with Microsoft before you can continue using it. Activation over the Internet is quick and easy.

You don't need to give your name or other personal information when you activate Windows.

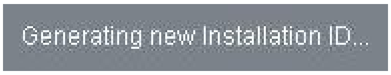
Do you want to activate Windows now?

○ Yes, let's activate Windows over the Internet now
○ Yes, I want to telephone a customer service representative to activate Windows
○ No, log me off

Microsoft is committed to your privacy. For more information, read the Windows Product Activation Privacy Statement

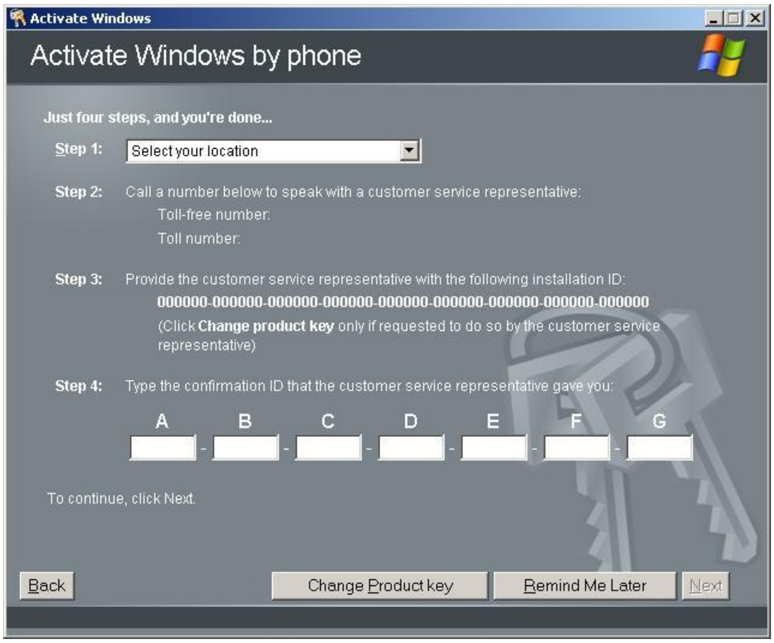
To continue, click Next.

The following screen is displayed.



Generating new Installation ID...

3. Process "Windows activation" according to the following message.



Activate Windows by phone

Just four steps, and you're done...

Step 1: Select your location

Step 2: Call a number below to speak with a customer service representative:
Toll-free number:
Toll number:

Step 3: Provide the customer service representative with the following installation ID:
000000-000000-000000-000000-000000-000000-000000-000000-000000
(Click **Change product key** only if requested to do so by the customer service representative)

Step 4: Type the confirmation ID that the customer service representative gave you:

A	B	C	D	E	F	G

To continue, click Next.

SETTING FOR SOLVING PROBLEMS

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix G

Installing Windows Server 2003

This section explains how to install the Windows Server 2003.

BEFORE INSTALLING WINDOWS SERVER 2003

Read the following notes or information before installing the Windows Server 2003.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD-ROM attached to your server supports the following optional boards:

NOTE: If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device".

- Controllers supporting installation of OS with Express Setup
  - N8103-129 RAID controller (256MB, RAID 0/1)*
  - N8103-130 RAID Controller (256 MB, RAID0/1/5/6)*
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*

* Option

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD-ROM attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)
- Windows Server 2003
  - OS installation media (with Service Pack 1)
  - OS installation media (with Service Pack 1) + Service Pack 2

Application of Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

Updating System

If you modified the Windows system, execute "Update Express5800 system" in the Autorun Menu.

Re-installing to the Hard Disk which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT and LTO, into the device mounted on this computer during the Windows installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the Upgrade to Windows Server 2003 R2

The "in-place upgrade" from Windows Server 2003 to Windows Server 2003 R2 is not recommended because it may overwrite any files or registries, and cause unexpected impact to the system or the applications.

If you install Windows Server 2003 R2, backup user data referring "Windows Server 2003 Clean Installation", and reinstall Windows Server 2003 R2.

NOTE: "in-place upgrade" is to perform overwrite upgrade from Windows Server 2003 which already installed to Windows Server 2003 R2.

About the System Partition Size

The size for the partition that the system is to be installed can be calculated from the following formula.

Required partition size
= Size necessary to install the system + Paging File Size + Dump File Size + Application Size

Size necessary to install the system = 3500MB (Windows Server 2003 R2)
= 3500MB (Windows Server 2003 with Service Pack 1)
= 3500MB (Windows Server 2003 R2 with Service Pack 2)
= 5300MB (Windows Server 2003 R2 + Service Pack 2)
= 5300MB (Windows Server 2003 with Service Pack 1 + Service Pack 2)
Paging File Size (Recommended) = Mounted Memory Size * 1.5
Dump file Size = Mounted Memory Size + 12MB
Application Size = Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 1GB (1,024MB), the partition size will be calculated by the above formula as follows:

3,500MB + (1,024MB * 1.5) + (1,024MB + 12MB) + Application Size
= 6,072MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING WINDOWS SERVER 2003

Preparations for Installation

- NEC EXPRESSBUILDER DVD-ROM
- Microsoft Windows Server 2003 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 Enterprise Edition (CD-ROM), Microsoft Windows Server 2003 R2 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 R2 Enterprise Edition (CD-ROM)
- Windows Server 2003 Service Pack (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 OEM-Disk for EXPRESSBUILDER

Creating "Windows Server 2003 OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-Disk for EXPRESSBUILDER.

NOTE: If you have already "Windows Server 2003 OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER with the following two procedures.

Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 Server to create Windows Server 2003 OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 or Windows can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

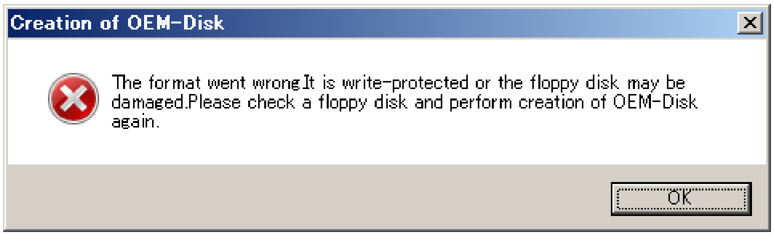
   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-DISK for Windows] from [Tools Menu] step.
6. Connect the Flash FDD or the USB floppy disk drive.
   (If you use the floppy disk drive, insert a floppy disk into it.)
7. Select [Create an Windows Server 2003 OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
8. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

IMPORTANT:

If you have created "OEM-Disk" in the Flash FDD, disconnect the Flash FDD after NEC EXPRESSBUILDER had been shut down.

NOTE: If the following message is displayed, the floppy disk is write-protected.



Creation of OEM-Disk

The format went wrong.It is write-protected or the floppy disk may be damaged.Please check a floppy disk and perform creation of OEM-Disk again.

Cancel write-protected state.

If you have already cancelled write-protected state, connect the floppy disk drive again.

Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one Flash FDD, or one USB floppy disk drive and 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.

   The Menu will appear.
4. Connect the Flash FDD or the USB floppy disk drive.
   (If you use the floppy disk drive, insert a floppy disk into it.)
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003].

   NOTE: You can do the same operation with the menu appeared by the Right-click.
6. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2003 Clean Installation

This section explains how to perform a clean installation of Windows Server 2003.

IMPORTANT:

- If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.
- If you have created OEM-Disk into the floppy disk, connect the USB floppy disk drive before you start the system.

1. Turn on the system power.
2. Insert the Windows Server 2003 CD-ROM into the optical disk drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. If the RAID Controller/Option Controller is used, press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT:

   - There is no visible indication on screen when **F6** has been pressed.
   - If the RAID Controller/Option Controller is not used, you do not need to press **F6**, and go to Step 12.
5. The following message is displayed.

```
Setup could not determine the type of one or more mass storage devices installed
in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage devices.
```

   <If the RAID Controller is used>

   Press S, and go to Step 6.

   <If the RAID Controller is not used>

   Go to Step 8.

6. The following message is displayed.

```
Please insert the disk labeled
manufacturer-supplied hardware support disk
into Drive A:
*Press ENTER when ready.
```

If you use the floppy disk drive, Insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

> **NOTE:** If you use the Flash FDD, the message above is not displayed.

A list of mass storage devices is displayed.

> **IMPORTANT:** If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.

7. Select the proper Controller and press **Enter**.

- [LSI MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)] (When N8103-129/130 RAID Controller is installed.)

The screen of Step 5 is displayed.

8. <If the SCSI Controller N8103-75/107 is connected>

Press **S**.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 9.

<If the SCSI Controller N8103-75/107 is not connected>

Go to Step 10.

9. A list of mass storage devices is displayed.

Select the [Adaptec Ultra320 SCSI Cards (Windows 32-bit)] and press **Enter**.

IMPORTANT: If the following message is displayed when you use the N8103-75/107 SCSI controller, press **S**.

```
The driver you provided seems to be newer
than the Windows default driver.
Windows already has a driver that you can use
for "Adaptec Ultra320 SCSI Cards (Windows
32-bit)"
Unless the device manufacturer prefers that
you use the driver on the floppy disk, you
should use the driver in Windows.
```

The screen of Step 5 is displayed.

Go to Step 10.

10. <If the SAS Controller N8103-104A is connected>

Press **S**.

IMPORTANT:

- Insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER into the floppy disk drive. If the floppy disk drive has already contained Windows Server 2003 OEM-Disk for EXPRESSBUILDER, you do not need to insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER.
- If you have created the OEM-Disk into the Flash FDD, connect the Flash FDD before you start the system.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 11.

<If the SAS Controller N8103-104A is not connected>

Press **Enter**, and go to Step 12.

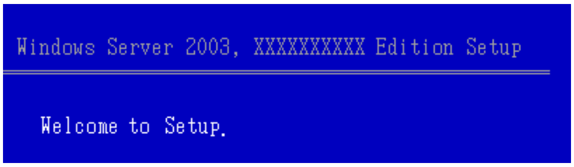
11. A list of mass storage devices is displayed.

Select the [LSI Fusion-MPT SAS Driver (Server 2003 32-bit)] and press **Enter**.

The screen of Step 5 is displayed.

Press **Enter**, and go to Step 12.

12. When the following message is shown, press **Enter** to start "Welcome to Setup".



```
Windows Server 2003, XXXXXXXXXX Edition Setup

  Welcome to Setup.
```

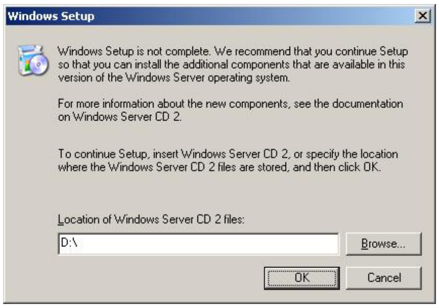
IMPORTANT: If you install Windows Server 2003 on the hard disk larger than 2,097,152MB(2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

---

13. When the installation of Windows Server 2003 has finished, the system reboots automatically.

- Windows Server 2003 has been installed: Go to the step 17.
- Windows Server 2003 R2 has been installed: Go to the step 14.

14. When Windows Server 2003 R2 has been installed, the [Windows Setup] screen will be displayed after logged on to the system.



Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.

For more information about the new components, see the documentation on Windows Server CD 2.

To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.

Location of Windows Server CD 2 files:

D:\

IMPORTANT:

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 DISC 2. In this case, note that the [Windows Setup] screen is not displayed.

---

15. Insert Microsoft Windows Server 2003 R2 DISC 2 CD-ROM into the optical disk drive.

Confirm the parameters and click [OK].

16. When the installation has completed, remove Microsoft Windows Server 2003 R2 DISC 2 CD-ROM from the optical disk drive, and restart the system.

17. When the installation has completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of manual.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 is written.

NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
- COA label may be attached to your server.

Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

Service Pack 2 need not be applied again when Windows Server 2003 CD-ROM which Service Pack 2 is included is used and it is installed.

Go to the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

IMPORTANT: In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

- Modified system configuration
- Recovered the system using recovery process.

NOTE: If you use Windows Server 2003 CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

Application Process of the Hotfix (KB921411)

Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.

   <When the English version of Windows Server 2003 R2 is used>

   ```
   \017\win\winnt\dotnet\qfe\enu\kb921411.exe
   ```

   <When the Simplified Chinese version of Windows Server 2003 R2 is used>

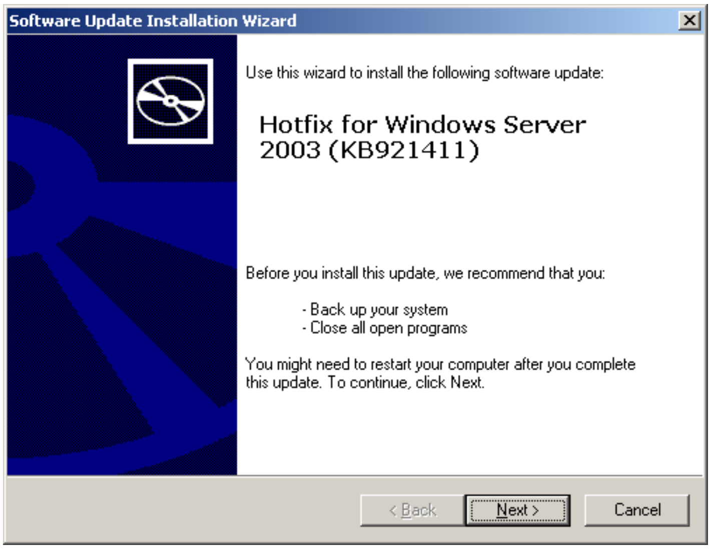
   ```
   \017\win\winnt\dotnet\qfe\chs\kb921411.exe
   ```

   <When the Traditional Chinese version of Windows Server 2003 R2 is used>

   ```
   \017\win\winnt\dotnet\qfe\cht\kb921411.exe
   ```

4. When the following message is displayed, click [Next].

After that, follow the message to continue the process.



Software Update Installation Wizard

Use this wizard to install the following software update:

Hotfix for Windows Server 2003 (KB921411)

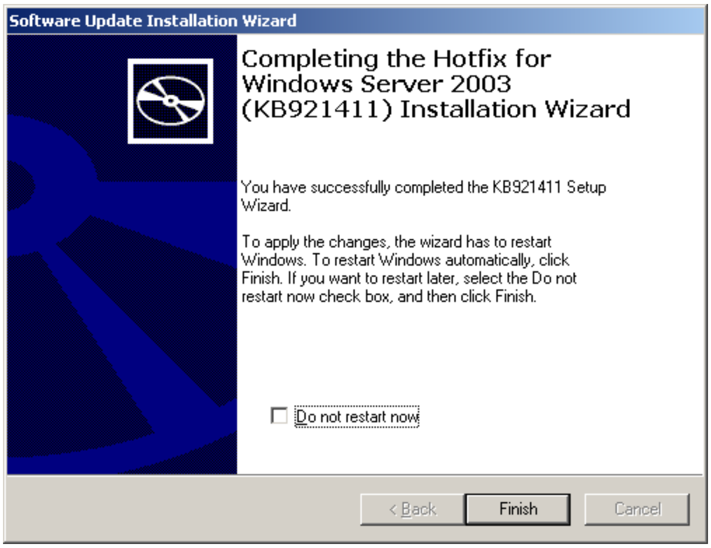
Before you install this update, we recommend that you:

- Back up your system
- Close all open programs

You might need to restart your computer after you complete this update. To continue, click Next.

< Back
Next >
Cancel

5. When the following message is displayed, make sure to click [Finish] to restart the system.



Software Update Installation Wizard

Completing the Hotfix for Windows Server 2003 (KB921411) Installation Wizard

You have successfully completed the KB921411 Setup Wizard.

To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.

☐ Do not restart now

< Back
Finish
Cancel

With that, application process of the Hotfix (KB921411) is finished.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows Server 2003 (KB921411) had been applied.

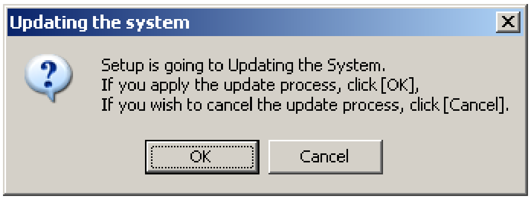
NOTE: If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

1. Log on to the system with the account that has administrative privilege (e.g. administrator).
2. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive of server.

   The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

NOTE: Right-clicking on the Autorun Menu produces the same outcome.

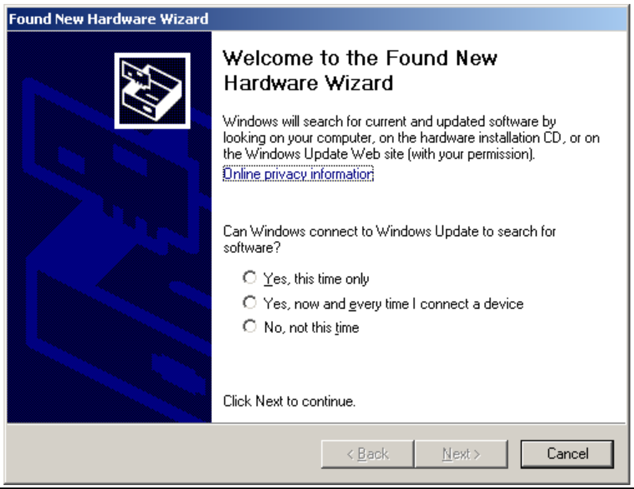
4. When the following message appears, click [OK].



Updating the system

Setup is going to Updating the System.
If you apply the update process, click [OK].
If you wish to cancel the update process, click [Cancel].

IMPORTANT: There is no problem in operation though the following messages might be displayed while executing "Updating the system". It is not displayed after a few seconds, and please does not push the [Cancel] button while it is displayed.



Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).

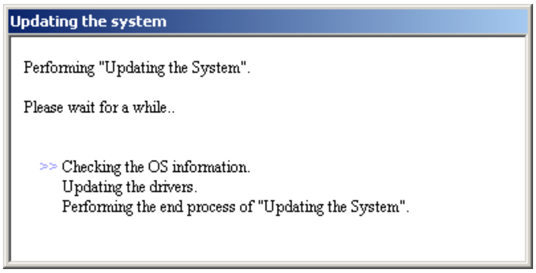
Online privacy information

Can Windows connect to Windows Update to search for software?

○ Yes, this time only
○ Yes, now and every time I connect a device
○ No, not this time

Click Next to continue.

NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2003.
Wait until the update completes.



Updating the system

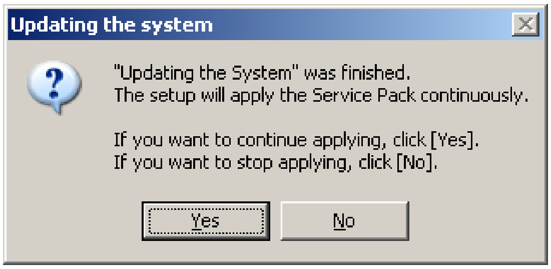
Performing "Updating the System".

Please wait for a while..

>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

---

5. When the following message appears, "Updating the System" was finished.



Updating the system

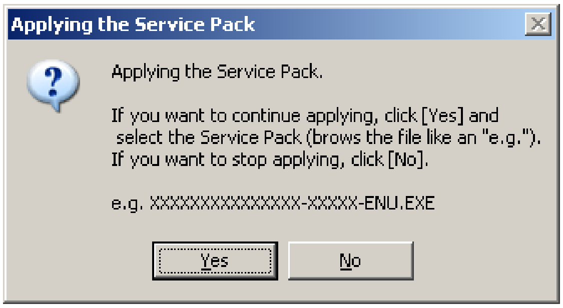
"Updating the System" was finished.
The setup will apply the Service Pack continuously.

If you want to continue applying, click [Yes].
If you want to stop applying, click [No].

When you apply Service Pack: Click [Yes], and then go to Step 6.

When you don't apply Service Pack: Click [No], and then go to Step 8.

6. When the following message appears, click [Yes].



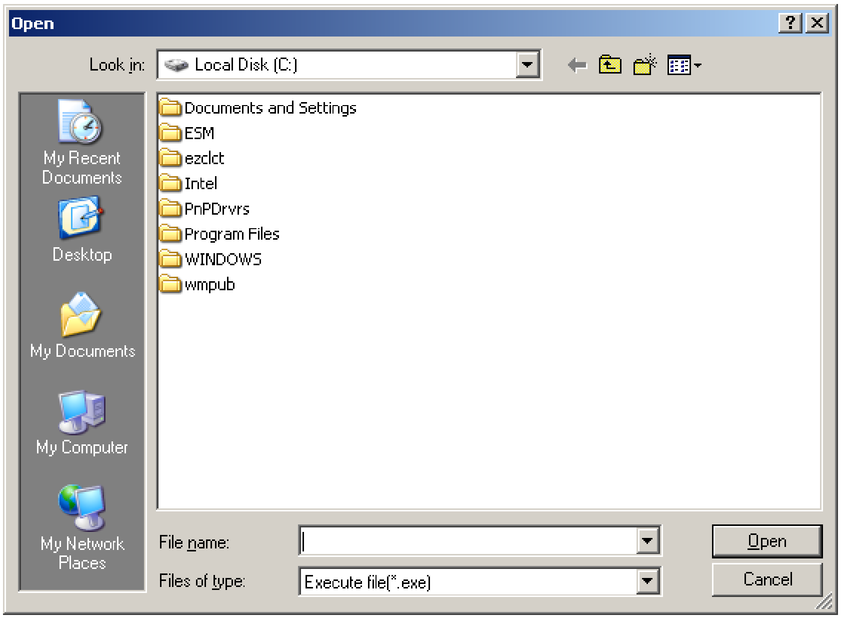
Applying the Service Pack

Applying the Service Pack.

If you want to continue applying, click [Yes] and
select the Service Pack (brows the file like an "e.g.").
If you want to stop applying, click [No].

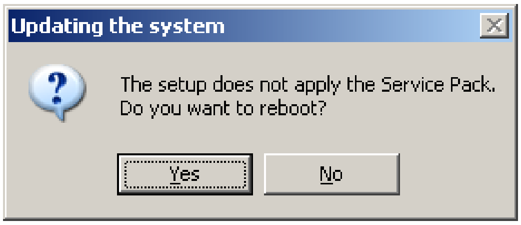
e.g. XXXXXXXXXXXXXX-XXXXX-ENU.EXE

7. When the following message appears, select a Service Pack and click [Open] and then, according to a message, please apply it.


Open
Look in:
Local Disk (C:)
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
Documents and Settings
ESM
ezclct
Intel
PnPDrvrs
Program Files
WINDOWS
wmpub
File name:
Files of type:
Open
Cancel

Files of type: Execute file(*.exe)

8. When the following message appears, click [Yes] to restart the system.


Updating the system
Yes
No

The setup does not apply the Service Pack.
Do you want to reboot?

The system has been updated.

Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows Server 2003 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows Server 2003 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].

   Hide extensions for know file type

   Hide protected operating system files [Recommended]

   When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].
4. Make sure of the files.

   Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

   If you can not found them, copy the files according to the following process.

   (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.

   (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".
5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows Server 2003 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

   With that, process is finished.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

LAN Driver and PROSet

Please refer to Chapter 5 "Installing and Setting Device Drivers" for Windows Server 2003 to install and setup LAN driver and PROSet.

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD-ROM into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "Install.bat" in the following directory.

   \017\win\winnt\dotnet\video\install.bat

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER DVD-ROM from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

The SCSI Controller driver will be installed automatically.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD-ROM attached to your system.

The SAS Controller driver will be installed automatically.

About Windows Activation

Windows Server 2003 must be activated before you can use Windows Server 2003.

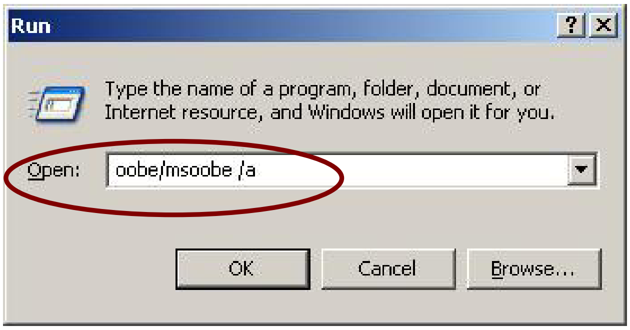
Windows activation process is as follows.

> **NOTE:** When you use Windows Server 2003 R2 Backup CD-ROM, activation process is not needed.

1. Click [Run] on [Start] menu.

   Type as follows in the [Open:] box, and click [OK].

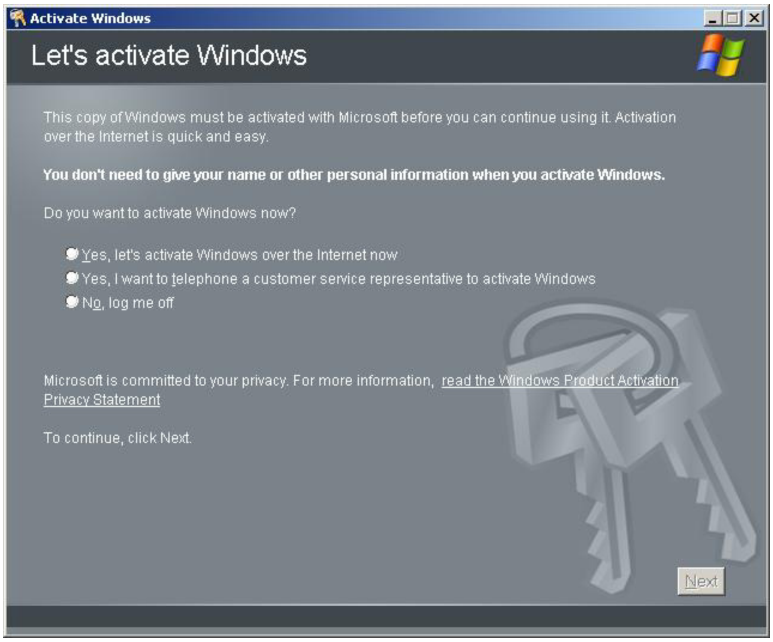
   oobe/msoobe /a



Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: oobe/msoobe /a

2. When the screen as follows is displayed, click [Next].



Let's activate Windows

This copy of Windows must be activated with Microsoft before you can continue using it. Activation over the Internet is quick and easy.

You don't need to give your name or other personal information when you activate Windows.

Do you want to activate Windows now?

○ Yes, let's activate Windows over the Internet now
○ Yes, I want to telephone a customer service representative to activate Windows
○ No, log me off

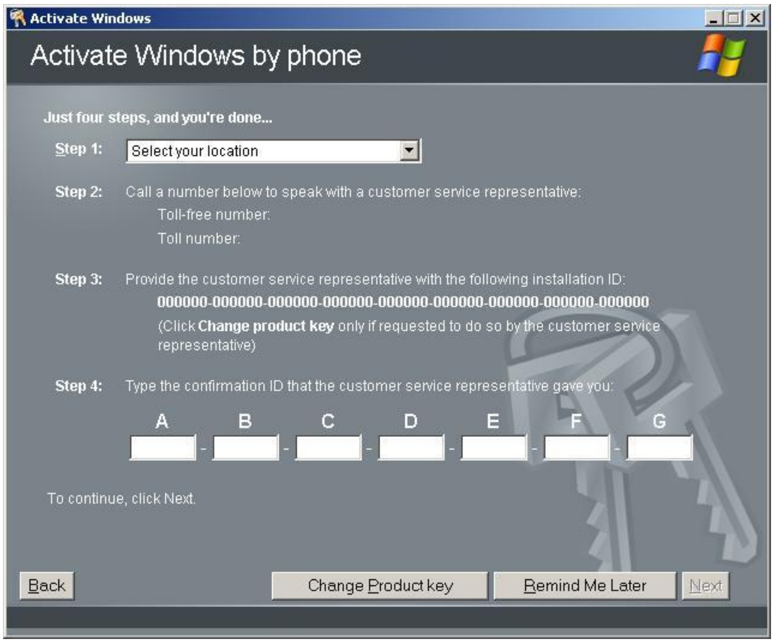
Microsoft is committed to your privacy. For more information, read the Windows Product Activation Privacy Statement

To continue, click Next.

The following screen is displayed.

Generating new Installation ID...

3. Process "Windows activation" according to the following message.



Activate Windows by phone

Just four steps, and you're done...

Step 1: Select your location

Step 2: Call a number below to speak with a customer service representative:

Toll-free number:

Toll number:

Step 3: Provide the customer service representative with the following installation ID:

000000-000000-000000-000000-000000-000000-000000-000000-000000

(Click **Change product key** only if requested to do so by the customer service representative)

Step 4: Type the confirmation ID that the customer service representative gave you:

A - B - C - D - E - F - G

To continue, click Next.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

IMPORTANT:

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

Microsoft Knowledge Base - Article ID: 291988
"A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

In Windows Server 2003 system, the PAE option can be set by editing boot.ini.

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].

   [System Properties] dialog box will be shown.
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

```
<Example of Boot.ini file>
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003 "
/fastdetect
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003 ,
PAE" /fastdetect /PAE
C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console " /cmdcons
```

This is the end of editing Boot.ini file.

NOTE: If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

SETTING FOR SOLVING PROBLEMS

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix H

Using a Client Computer Which Has a CD Drive

The NEC EXPRESSBUILDER disk is DVD so that a client computer which you want to use for managing the server needs a DVD drive.

If you want to install the management software of EXPRESSBUILDER to the client without the DVD drive, make a CD-R from EXPRESSBUILDER DVD-ROM according to the following steps.

> **NOTE:** This procedure can copy only one CD at the purpose of installing the management software to the client.

1. Insert the EXPRESSBUILDER DVD-ROM to the computer which has a DVD drive.
2. If Autorun menu appears, close the menu.
3. Copy the below files of EXPRESSBUILDER to a hard disk by using Explorer.

```
\(root folder): copy version.xml
      |
    \017
      |
      ├──\ar_menu : copy this sub-folder
      |
      ├──\doc : copy this sub-folder
      |
      └──\win : copy this sub-folder
```

4. Delete the ar_menu\autorun_menu.xml on the hard disk, and rename the ar_menu\autorun_en.xml on the hard disk to the autorun_menu.xml.
5. Copy the above files/folders to a CD-R.

   Match the root folder when you burn a CD-R.
6. Delete the files/folders that you copied at step 3.
7. Insert the CD-R to a client computer which you want to install the management software.
8. Kick the below file of the CD-R by using Explorer.

\017\ar_menu\autorun_menu.exe	(for Windows 32 bit edition)
autorun_menu_x64.exe	(for Windows 64 bit edition)

(This page is intentionally left blank.)

Appendix I

Accessing Power and Performance Data

This chapter describes how to collect the power and performance data, including power consumption, inlet air temperature, and processor utilization of NEC Express server in usual operation. These are defined in ENERGY STAR® Program Requirements for Computer Servers and must be available to users.

The sample program shown below is verified to be run normally on Windows Server® 2008 Enterprise 32bit (x86) Edition.

POWER CONSUMPTION

Run the following commands to access power consumption readings on BMC (Baseboard Management Controller) via IPMI (Intelligen Platform Management Interface).

Network Function Code: 3Eh (Controller-specific OEM)

Command Code: 0Bh (Get Current Sensor Data)

Shown below is a sample file created by Visual Basic Script (e.g. Power.vbs).

```
' Start Script
Option Explicit

' Prepare for IPMI Driver
Dim osvc, oclass
Dim oinstance, oipmi
set osvc = getobject("winmgmts:root\wmi")
set oclass = osvc.get("microsoft_ipmi")
for each oinstance in osvc.instancesof("microsoft_ipmi")
            set oipmi = oinstance
next

'Format the IPMI command request
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
oinparams.networkfunction = &h3e    ‘ OEM NetworkFunction
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h0b            ‘ Get Current Sensor Data Command
oinparams.requestdatasize = 0
```

```
'call the driver
Dim outparams
set outparams = oipmi.execmethod_("requestresponse",oinparams)

WScript.Echo " Completion Code = 0x" & hex(outparams.Completioncode)
If outparams.Completioncode <> 0 Then
    Wscript.Echo " Not supported"
Else
    'WScript.Echo " Data LS Byte    = 0x" & hex(outparams.ResponseData(1))
    'WScript.Echo " Data MS Byte    = 0x" & hex(outparams.ResponseData(2))
    WScript.Echo " Power Consumption = " & outparams.ResponseData(2)*256 + _
                                         outparams.ResponseData(1) & " watts"
End If
' End Script
```

Command Line (Example)

```
C:\VBS> cscript //nologo Power.vbs
```

Execution Result (Example)

```
Completion Code = 0x0
Power Consumption = 528 watts
```

The power consumption is 528 watts.

NOTE: Power consumption may not be collected depending on power supply configuration of the server. In such a case, Completion Code is shown as 0xC1 or 0xCB.

INLET AIR TEMPERATURE

Run the following IPMI commands to access the SDR (Sensor Data Record) and obtain an inlet air temperature data.

Get SDR Repository Info

Reserve SDR Repository

Get SDR

Get Sensor Reading

Shown below is an example of the file created by Visual Basic Script (e.g. Sensor.vbs).

```
'Start Script
Option Explicit

' Prepare for MS IPMI Driver
Dim osvc, oclass
Dim oinstance, oipmi
set osvc = getobject("winmgmts:root\wmi")
set oclass = osvc.get("microsoft_ipmi")
for each oinstance in osvc.instancesof("microsoft_ipmi")
            set oipmi = oinstance
next

' (Get SDR Repository Info)
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
' (Get SDR Repository Info)
oinparams.networkfunction = &ha
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h20
oinparams.requestdatasize = 0
' Fire IPMI Command
Dim outparams
Dim i, RecordCount
set outparams = oipmi.execmethod_("requestresponse",oinparams)
RecordCount = outparams.ResponseData(3)*256 + outparams.ResponseData(2)

' (Reserve SDR Repository)
oinparams.networkfunction = &ha
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h22
oinparams.requestdatasize = 0
Dim Reserve_LS, Reserve_MS
set outparams = oipmi.execmethod_("requestresponse",oinparams)
Reserve_LS = outparams.ResponseData(1)
Reserve_MS = outparams.ResponseData(2)
```

```
' (Get SDR) for each record
Dim Record_LS,Record_MS, Offset, Length
Dim cnt, sensorNum, sensorType
' First Record
Record_LS = 0
Record_MS = 0
For cnt = 0 to RecordCount-1
    Offset = 0
    Length = 9
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(Reserve_LS, Reserve_MS, Record_LS, Record_MS, Offset, Length)
    oinparams.requestdatasize = 6
    set outparams = oipmi.execmethod_("requestresponse",oinparams)
    If outparams.Completioncode = 0 Then
        If outparams.ResponseData(6) = 1 Then            ' Full Sensor Record
            call GetSensorType(Reserve_LS, Reserve_MS, Record_LS, Record_MS, sensorType)
            If sensorType = 1 Then                       ' Temperature
                WScript.Echo "==========================================="
                call GetIDString(Reserve_LS, Reserve_MS, Record_LS, Record_MS)
                WScript.Echo " Sensor Type = Temperature"
                sensorNum = outparams.ResponseData(10)
                call GetSensor(Reserve_LS, Reserve_MS, Record_LS, Record_MS,sensorNum)
            End If
        End If
        Record_LS = outparams.ResponseData(1)
        Record_MS = outparams.ResponseData(2)
        If Record_LS = &hff And Record_MS = &hff Then
             exit For
        End If
    End If
Next

Sub GetSensorType(rv_ls, rv_ms, rc_ls, rc_ms, sensorType)
    Dim outtmp
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 12, 2)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod_("requestresponse",oinparams)
    sensorType = outtmp.ResponseData(3)
End Sub
```

```
Sub GetSensor(rv_ls, rv_ms, rc_ls, rc_ms, sensorNum)
    Dim outtmp, units1, units2, sensortype
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 20, 14)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod_("requestresponse",oinparams)

    units1 = outtmp.ResponseData(3)
    Select Case outtmp.ResponseData(4)
        case 0: units2 = "unspecified"
        case 1: units2 = "degrees C"
        case 6: units2 = "Watts"
        case else: units2 = "Refer to IPMI Specification: Type=0x" _
                            & hex(outtmp.ResponseData(4))
    End Select

    ' (Get Sendor Reading)
    Dim sensorData, rawData, currentValue
    oinparams.networkfunction = &h4
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h2d
    oinparams.requestdata = array(sensorNum)
    oinparams.requestdatasize = 1
    set sensorData = oipmi.execmethod_("requestresponse",oinparams)
    If sensorData.Completioncode <> 0 Then
        'WScript.Echo " Sensor Not Available"
        exit Sub
    End If
    rawData = sensorData.ResponseData(1)
    If units1 and &h40 Then
        If rawData And &h80 Then
            rawData = rawData Xor &hff
        End If
    Elseif units1 and &h80 Then
        call get2complement(rawData, rawData, 8)
    End If
    If (sensorData.ResponseData(2) And &h80) = 0 Or _
       (sensorData.ResponseData(2) And &h40) = 0 Or _
       (sensorData.ResponseData(2) And &h20) Then
        WScript.Echo " Event Status: Unavailable"
    Else
        'WScript.Echo " Event Status: ok"
        Dim M,B,k1,k2
        Dim ret
        M = (outtmp.ResponseData(8) And &hc0) * 4 + outtmp.ResponseData(7)
        B = (outtmp.ResponseData(10) And &hc0) * 4 + outtmp.ResponseData(9)
        call get2complement(M, M, 10)
        call get2complement(B, B, 10)
        call get2complement(outtmp.ResponseData(12) And &h0f, k1, 4)
        call get2complement((outtmp.ResponseData(12) And &hf0)/16, k2, 4)
        currentValue = CDbl (((M * rawData) + (B * (10 ^ k1))) * (10 ^ k2))
        WScript.Echo " Current Value = " & currentValue & " " & units2
    End If
End Sub
```

```
Sub get2complement(raw, rv, bit)
    Select Case bit
        case 4:
            If raw And &h8 Then
                rv = 0 - ((&h10 - raw) and &h0f)
            Else
                rv = raw
            End If
        case 8:
            If raw And &h80 Then
                rv = 0 - ((&h100 - raw) and &h0ff)
            Else
                rv = raw
            End If
        case 10:
            If raw And &h200 Then
                rv = 0 - ((&h400 - raw) and &h3ff)
            Else
                rv = raw
            End If
    End Select
End Sub

Sub GetIDString(rv_ls, rv_ms, rc_ls, rc_ms)
    Dim tmpMessage
    Dim outsdridstringtype
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 47, 1)
    oinparams.requestdatasize = 6
    set outsdridstringtype = oipmi.execmethod_("requestresponse",oinparams)

    Dim outsdridstring
    Dim idlength, j
    idlength = outsdridstringtype.ResponseData(3) and 31
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 48, idlength)
    oinparams.requestdatasize = 6
    set outsdridstring = oipmi.execmethod_("requestresponse",oinparams)
    tmpMessage = " ID String = "
    For j = 3 to idlength + 2
        tmpMessage = tmpMessage & Chr(outsdridstring.ResponseData(j))
    Next
    WScript.Echo tmpMessage
End Sub
'End Script
```

Command Line (Example)

```
C:\VBS> cscript //nologo Sensor.vbs
```

Execution Result (Example)

```
===========================================
 ID String = Front Panel Temp
 Sensor Type = Temperature
 Current Value = 27 degrees C
===========================================
 ID String = Baseboard Temp1
 Sensor Type = Temperature
 Current Value = 50 degrees C
===========================================
 ID String = Baseboard Temp2
 Sensor Type = Temperature
 Current Value = 53 degrees C
===========================================
 ID String = IO Riser Temp
 Sensor Type = Temperature
 Current Value = 43 degrees C
===========================================
 ID String = M1 DIMM 1A Temp
 Sensor Type = Temperature
 Current Value = 37 degrees C
===========================================
    :
    :
```

Inlet air temperature data is obtained from the sensor that contains the character string "Amb", "Ambient", or "Front Panel" in its ID String.

In the example above, the data is obtained from "Front Panel Temp" sensor, and the sensor reading is 27ºC.

PROCESSOR UTILIZATION

To collect the utilization of processors, use Win32_PerfFormattedData_PerfOS_Processor class provided with the Windows OS.

Shown below is a sample file created by Visual Basic Script (e.g. Proc.vbs).

In this script, the processor utilization is collected every 30 seconds.

```
' Start Script
strComputer = "."
Set objWMIService = GetObject("winmgmts:" _
    & "{impersonationLevel=impersonate}!\\" & strComputer & "\root\cimv2")
set objRefresher = CreateObject("WbemScripting.Swbemrefresher")
Set objProcessor = objRefresher.AddEnum _
    (objWMIService, "Win32_PerfFormattedData_PerfOS_Processor").objectSet
objRefresher.Refresh
Dim first
first = true
Do
  For each intProcessorUse in objProcessor
    If first Then
      If intProcessorUse.Name = "_Total" Then
        first = false
      End If
    else
      Wscript.Echo "Proc" & intProcessorUse.Name & " : " & _
                   "PercentProcessorTime=" & _
                   intProcessorUse.PercentProcessorTime
    End If
  Next
  Wscript.Sleep 30*1000   'sleep 30 * 1000ms
  objRefresher.Refresh
Loop
' End Script
```

Command Line (Example)

```
C:\VBS> cscript //nologo Proc.vbs
```

Execution Result (Example)

```
Proc0 : PercentProcessorTime=9
Proc1 : PercentProcessorTime=0
Proc2 : PercentProcessorTime=0
Proc3 : PercentProcessorTime=0
Proc4 : PercentProcessorTime=0
Proc5 : PercentProcessorTime=1
Proc6 : PercentProcessorTime=6
Proc7 : PercentProcessorTime=41
Proc8 : PercentProcessorTime=0
Proc9 : PercentProcessorTime=0
Proc10 : PercentProcessorTime=0
Proc11 : PercentProcessorTime=0
Proc12 : PercentProcessorTime=0
Proc13 : PercentProcessorTime=7
Proc14 : PercentProcessorTime=20
Proc15 : PercentProcessorTime=63
   :
   :
Proc_Total : PercentProcessorTime=8
```

Proc0 to Proc64 represents utilization of individual processor, and Proc_Total represents utilization of overall processors.

NOTE: The processor number indicates a logical CPU number, not a physical CPU number. The maximum processor number depends on processor type and how they are configured.

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Appendix J

Product Configuration Record Table

Use this table for information about setup and system environment change.

Hardware

Main Unit						
	Model name		Serial No.		Date Installed	
CPU						
#1	Clock		Serial No.		Date Installed	
#2	Clock		Serial No.		Date Installed	
Memory						
CPU1-DIMM1	Size		Serial No.		Date Installed	
CPU1-DIMM2	Size		Serial No.		Date Installed	
CPU1-DIMM3	Size		Serial No.		Date Installed	
CPU1-DIMM4	Size		Serial No.		Date Installed	
CPU1-DIMM5	Size		Serial No.		Date Installed	
CPU1-DIMM6	Size		Serial No.		Date Installed	
CPU2-DIMM1	Size		Serial No.		Date Installed	
CPU2-DIMM2	Size		Serial No.		Date Installed	
CPU2-DIMM3	Size		Serial No.		Date Installed	
CPU2-DIMM4	Size		Serial No.		Date Installed	
CPU2-DIMM5	Size		Serial No.		Date Installed	
CPU2-DIMM6	Size		Serial No.		Date Installed	
Monitor						
	Type		Model name		Serial No.	
					Date Installed	
Hard Disk Drive						
Port 0	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Port 1	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Port 2	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Port 3	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Port 4	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Port 5	Type			Serial No.		
	Capacity			Date Installed		
	Type number					

Port 6	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Port 7	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Port 8	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Backup Device						
Slot 1	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
PCI Slot #0A						
	Model name				Serial No.	
					Date Installed	
PCI Slot #2B						
	Model name				Serial No.	
					Date Installed	
PCI Slot #3B						
	Model name				Serial No.	
					Date Installed	
PCI Slot #1C						
	Model name				Serial No.	
					Date Installed	
PCI Slot #2C						
	Model name				Serial No.	
					Date Installed	
PCI Slot #3C						
	Model name				Serial No.	
					Date Installed	
Printer						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Additional Cabinet for Disk						
	Model name				Serial No.	
					Date Installed	
External Peripheral Device 1						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 2						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 3						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 4						
	Model name				Serial No.	
	Manufacturer				Date Installed	

Software

Firmware version	
OS Application of RUR media	Name: Version: ☐ Apply Name: Version:
File system	☐ FAT ☐ HPFS ☐ NTFS ☐ Others ( )
Bundled software installed	
Licensed software installed	
Application running when a failure occurred	

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